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DEPARTMENTS OF VETERANS AFFAIRS AND HOUSING AND URBAN DEVELOPMENT, AND INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1990

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

H.R. 2916

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENTS OF VETERANS AFFAIRS AND HOUSING AND URBAN DEVELOPMENT, AND FOR SUNDRY INDEPENDENT AGENCIES, BOARDS, COMMISSIONS, CORPORATIONS, AND OFFICES FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1990, AND FOR OTHER PURPOSES

PART 3 (Pages 1–355)

NONDEPARTMENTAL WITNESSES

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VA, HUD, AND INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1990

THURSDAY, MAY 18, 1989

U.S. Senate,
Subcommittee of the Committee on Appropriations,
Washington, DC.

The subcommittee met at 10:05 a.m., in room SD–116, Dirksen Senate Office Building, Hon. Wyche Fowler, Jr., presiding.

Present: Senators Mikulski, Fowler, Garn, and Grassley.

NONDEPARTMENTAL WITNESSES

OPENING REMARKS

Senator Fowler. The subcommittee will come to order.

Today we will hear from congressional and public witnesses regarding the proposed budget requests for the Department of Housing and Urban Development, the Environmental Protection Agency, and the Federal Emergency Management Agency.

That's enough of an opening statement. [Laughter.]

We are very pleased to have many of our distinguished colleagues here, leading with the senior Senator from California, Alan Cranston.

Senator Cranston, we would be delighted to hear from you.

Environmental Protection Agency

STATEMENT OF HON. ALAN CRANSTON, U.S. SENATOR FROM CALIFORNIA

Senator Cranston. Thank you very much, and I will be almost as brief as you have just been. I do have a longer statement I would like to go in the record.

Senator Fowler. Without objection.

Senator Cranston. I appreciate the opportunity to appear before this Subcommittee on HUD and Independent Agencies to testify in support of funding for two Environmental Protection Agency programs of great importance to me and to the people of California.

The first request is for $7 million for the Tijuana sewage project.

As I think you will recall, we have a tremendously serious sewage problem along the United States-Mexican border between Tijuana and San Diego. Mexican sewage is flowing into our country and polluting the federally protected Tijuana estuary and forcing closure of California beaches and threatening the health and safety of the American public.

Recognizing that this is an international problem and that the Federal Government has a responsibility to protect its citizens, Congress last year appropriated moneys for the pipeline component of the project. An appropriation of $7 million in fiscal 1990 will permit EPA to plan and design a treatment facility and outfall portion of the project.

My friend and colleague, Senator Wilson, is a particular expert on this need because it is close to where he served as mayor for so long.

My second request is for $2 million for the San Joaquin Valley air quality study.

SAN JOAQUIN VALLEY AIR QUALITY STUDY

The San Joaquin Valley air quality study is designed to address a serious ozone pollution problem which currently exists in the San Joaquin Valley. It will provide critical information to make future controls truly effective in reducing ozone. Last year, $1 million was provided in Federal funds for the study. The remaining $2 million, which would constitute the Federal Government's total share, is needed this year in order to assure that the study can be completed on schedule in 1990.

We all know now how important the whole ozone issue is, and I strenuously urge that this support be given, which is very modest, obviously.

I'm very grateful that the subcommittee agreed to include funds for both of these projects in the conference report on the fiscal year 1989 HUD and Independent Agencies appropriation bill, and I am hopeful you will provide essential continued funding for both projects in fiscal year 1990.

I thank you for the opportunity to testify and appreciate your consideration of these modest requests.

Senator FOWLER. Thank you very much, Alan.

[The statement follows:]

STATEMENT OF SENATOR ALAN CRANSTON

Madame Chairman, I appreciate the opportunity to appear before the Senate Appropriations Committee Subcommittee on HUD and Independent Agencies to testify in support of funding for two Environmental Protection Agency programs of great importance to me and to the people of California.

My first request is for $7 million for the Tijuana sewage project.

My second request is for $2 million for the San Joaquin Valley Air Quality Study.

Madame Chairman, I'm very grateful that this Subcommittee agreed to include funds for both these projects in the conference report on the FY 1989 HUD and Independent Agencies Appropriation Bill and am hopeful you will provide essential continued funding for both projects in FY 1990.

As you will recall, we have a tremendously serious sewage problem along the U.S.-Mexican border between Tijuana and San Diego. Mexican sewage is flowing into our country, polluting the federally protected Tijuana estuary, forcing closure of California beaches, and threatening the health and safety of the American public.

Recognizing that this is an international problem and that the federal government has a responsibility to protect its citizens, Congress included language in the 1984 HUD and Independent Agencies Appropriation Bill authorizing $32 million for the planning and construction of a defensive system on the U.S.-Mexican border to intercept the Tijuana sewage flows in the

United States and pump them back into Mexico. Congress initially appropriated $5 million for planning and design of this project. Last year Congress appropriated $20 million for EPA to commence construction of this defensive system.

Today I must report that because of continued growth in Tijuana, the sewage conveyance channel in Mexico which is to receive the sewage pumped back across the border now has insufficient capacity to handle this sewage. Existing sewage flows from Tijuana River and West Tijuana are now 34 million gallons per day, while the conveyance channel has a capacity of 30 million gallons per day. Future flows from the Mataderos Canyon area will further aggravate the problem. Thus, it's thus very clear that the original "return to sender" project has become inadequate to address this ever-worsening pollution problem.

The International Boundary and Water Commission, a joint U.S.-Mexico agency, has proposed that we redesign the project. The Commission's plan retains the pipeline to transport the Mexican sewage, and the funds previously appropriated for construction of the pipe would still be used for this purpose. Construction of the pipe is scheduled for this summer.

However, the redesigned project eliminates the pump station and replaces it with a sewage treatment facility in the United States and an ocean outfall. The treatment facility would handle only Mexican sewage.

The redesigned project has a number of important advantages over the original project. It provides secondary treatment of the sewage. It serves both as a defensive system and as effective treatment of East Tijuana flows. It has the potential for reclamation. And it is anticipated that Mexico will participate in the funding. The total federal cost is approximately $100 million. With the funds already available, the remaining federal funding required is $80 million.

The International Boundary and Water Commission, EPA, State of California, County of San Diego, and City of San Diego all agree that construction of a treatment facility in the United States and ocean outfall is the only viable long-term solution to the Tijuana sewage problem. I agree and fully support the recommendation of the International Boundary and Water Commission.

Madame Chairman, Today I am asking the Subcommittee to appropriate $7 million for the Tijuana sewage project and permit the funds to be used for EPA planning and design of the treatment facility and outfall. It is imperative the federal government address this urgent international pollution problem.

Madame Chairman, I would now like to turn to another matter that I consider extremely important -- funding for the San Joaquin Valley Air Quality Study. The San Joaquin Valley is home to nearly 2.4 million people. It is often referred to as the nation's "breadbasket" because it has some of the most fertile agricultural land in the country and produces an annual agricultural crop of $8 billion.

The San Joaquin Valley is equal in size to New Hampshire, Massachusetts and Connecticut combined and comprises the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare. The problem is that the valley consistently exceeds the federal ozone standard. The air pollution level, in addition to posing a serious threat to health, is damaging the valley's $8 billion agricultural crop, damaging trees and potentially affecting Giant Sequoia reproduction in the National Parks.

The air quality problem in the valley has been recognized for a number of years. Major emissions controls for stationary sources were instituted twice, in 1980 and 1983, in the southern portion of the valley. Similarly, automobile inspection and maintenance requirements have been initiated in several counties. In spite of such efforts, the ozone level has not been appreciably reduced.

The potential economic consequences of this situation are substantial and could cost the region and the nation hundreds of millions of dollars per year in reduced agricultural production and constrained commercial development.

The concern is that additional controls will be required, as is most likely once Congress passes the Clean Air Act Amendments, and those controls will be costly and not effective unless the valley is able to conduct the study and collect the information needed to devise an appropriate control strategy.

In the past much of the problem has been failure to address the air pollution problem on a valley-wide basis. The number of pollution sources are many and varied. What is not known is the chemical makeup and percentage amounts contributed by each of the sources to the total problem.

A significent factor in the valley's ozone problem is believed to be attributable to the long-range transport of pollutants originating in coastal urban centers and other areas. In fact, as much as one-third to one-half of the area's ozone levels may be attributed to this phenomenon.

The long-range transport of ozone pollution is not unique to California but is a national problem. Last year the Senate clean air bill specifically included a provision to address this problem by creating ozone transport regions composed of various states in the East and Midwest. This study could potentially serve as a model for other areas battling the same problem of long-range ozone transport.

The counties involved have formed a joint powers agency to design and implement an ozone pollution study encompassing the entire San Joaquin Valley. The study will provide, through extensive data collection, modeling, and data analysis, information to make future controls truly effective in reducing ozone. It is structured to deliver, on an almost continuous basis, an ever improving flow of data and knowledge to be used by the enforcement agencies.

The total cost of the study is $9 million. Of that amount, a third, or $3 million would be borne by the state, another third through a combination of county and private industry sources, and a final third by the federal government.

Last year, $1 million was provided in federal funds for the study. Language was also included in the Conference Report acknowledging the fact that additional funding would be needed.

It is important that the remaining $2 million in federal funds be provided this year in order to assure that the study can be completed on schedule in the summer of 1990.

The $2 million would constitute the federal government's total contribution and ensure completion of this important study.

I want to thank the Subcommittee for this opportunity to testify and appreciate your consideration of both of my requests. Thank you.

STATEMENT OF HON. PETE WILSON, U.S. SENATOR FROM CALIFORNIA

Senator **Fowler**. We also have the other Senator from California, the distinguished Pete Wilson.

Senator **Wilson**. Thank you very much, Mr. Chairman.

I am here to join with my colleague, Alan Cranston, in support of the two projects upon which he has addressed the subcommittee this morning.

Let me amplify on his excellent statement to the extent that this first problem that he has described is, as he has told you, not a new one. It is unhappily an old one that is seemingly growing no better and, indeed, is growing worse as the communities on both sides of the Mexican/American border continue to experience gowth.

TIJUANA SEWAGE PROBLEM

Tijuana sewage has plagued San Diego for the last 50 years, but it has become truly intolerable. As he told you, the malfunctioning of the sewage system and its inadequacy to begin with on the Mexican side of the border has resulted literally in raw sewage flowing into the United States and within what are the southern boundaries of the city of San Diego. Beyond that, it has, as he told you, forced the closure of beaches in San Diego because those beaches have been polluted by this raw sewage.

Now what has occurred is that there have been repeated efforts to try to deal with the problem. There has been an effort to try to get Mexico to improve their capability to contain this problem. Frankly, in a word they have failed.

Six years ago we in the United States took the step of actually withholding approval of an Inter-American Development Bank loan for the purpose of developing a water distribution system on the Mexican side of Tijuana, and the result of that was that there was agreement on the part of the Mexican Government working with EPA and working with the International Boundary and Water Commission to make improvements. Unhappily, time has proved that whatever those good intentions were, they simply have not proved sufficient to the problem.

Tijuana did construct some new facilities in 1986, and they did succeed in enhancing their treatment capacity, but the construction program has since fell by the wayside. There has just been a chronic lack of funding.

NEW STRATEGY

So, finally, thanks to the commendable efforts of the International Boundary and Water Commission [IBWC], we are now embarked on a new Tijuana sewage treatment strategy on which an American plant on our side of the border will deal with this problem. It is the only way that we have any assurance that it will be treated adequately.

EPA, the International Boundary and Water Commission, the State of California, and the city of San Diego are now agreed that that is not only the best, but perhaps the only solution to the problem that will allow us to avoid this pollution and closure of beaches at any time within the foreseeable future.

So what is being proposed is a 25 million gallon per day treatment facility on the U.S. side of the border. The $7 million that Senator Cranston spoke in support of will finance the planning and the design of that proposed facility.

Once the work has been completed, the International Boundary and Water Commission will be in a position to reach an agreement between the United States and Mexico on the project's completion and the financing of that completed work.

Now, let me just point out, as I believe the senior Senator noted in his testimony, the $7 million that we are requesting has already been authorized as part of the $32 million Tijuana sewage authorization that was contained in the fiscal year 1984 appropriation bill. So it is almost impossible for him or for me to emphasize too strongly the need to resolve this situation.

It is a problem that has gone a long way toward really undermining the good will that has existed between the two communities for a long, long time.

SAN JOAQUIN VALLEY AIR QUALITY STUDY

The second project that Senator Cranston sought support for is that of the San Joaquin Valley air quality study. I think you will remember that we requested $3 million for the Federal share of what is a $9 million project. The conference committee provided only $1 million and delayed what was intended to be a one-time appropriation for the project.

So this year I'm requesting that the remaining $2 million be appropriated to allow for timely completion of this really critical study. As Senator Cranston indicated, it is we think a modest request. The study is of enormous importance to the improvement of air quality in California's San Joaquin Valley.

To most effectively reduce the pollution in the basin, we need accurate information about the sources of the pollutants. It's believed that many of the valley's air pollution problems can be attributed to the long-range transport of pollutants within the air basin, and in that respect to the San Joaquin Valley study would provide detailed information on long-range transport that would be of, I think, value in other parts of the country. Notably, the Northeast Corridor experiences a similar air quality long-range transport of pollution that would benefit from the results of this study.

I should mention, too, that the San Joaquin air study already has the support of Kern County, of the State of California, of Chevron U.S.A., and of other independent oil producers that are operating within that region, and one-third of the estimated $9 million will be borne by the State alone, while the other $3 million required will be contributed through a combination of county governments and private industry sources.

The $2 million appropriation that we are seeking this year to fulfill the Federal commitment will round out the total $9 million required for the funding.

Mr. Chairman, Senator Cranston and I are very grateful for the assistance that the subcommittee has provided us, and we do in particular seek your assistance on these two critically needed projects.

[The statement follows:]

STATEMENT OF SENATOR PETE WILSON

MR. CHAIRMAN, I THANK THE COMMITTEE FOR THE OPPORTUNITY TO TESTIFY ON BEHALF OF TWO CALIFORNIA PROJECTS.

THE FIRST PROJECT REQUIRES AN APPROPRIATION OF SEVEN MILLION DOLLARS TO FINANCE THE PLANNING AND DESIGN OF A JOINT INTERNATIONAL PROJECT TO TREAT SEWAGE FROM TIJUANA, MEXICO THAT IS NOW CONTAMINATING SAN DIEGO AND ITS ENVIRONMENT.

TIJUANA SEWAGE HAS PLAGUED SAN DIEGO FOR THE LAST FIFTY YEARS. EVEN THOUGH TIJUANA HAS A SEWAGE COLLECTION AND TREATMENT SYSTEM, IT IS NOTORIOUS FOR MALFUNCTIONING. AND WHEN IT DOES WORK, IT IS INCAPABLE OF CAPTURING ALL OF TIJUANA'S SEWAGE. AS A CONSEQUENCE, RAW TIJUANA SEWAGE FLOWS DOWNHILL TO THE TIJUANA RIVER AND ESTUARY AND INTO THE UNITED STATES.

FOR THOSE OF US WHO HAVE BEEN GRAPPLING WITH THIS PROBLEM FOR YEARS, IT HAS BECOME CLEAR THAT THE ONLY LOGICAL SOLUTION IS TO BUILD A NEW TREATMENT FACILITY ON THE U.S. SIDE OF THE BORDER. SUCH A SITE HAS ALWAYS MADE THE MOST SENSE FROM AN ENGINEERING POINT OF VIEW. IN FACT, THIS FACILITY PROBABLY WOULD HAVE BEEN BUILT BY NOW WERE IT ONLY DOMESTIC SEWAGE THAT WAS AT ISSUE.

BUT WHAT WE ARE DEALING WITH, OF COURSE, IS SEWAGE FROM TIJUANA, MEXICO. FOR A TIME, THE STRATEGY WAS TO ENCOURAGE TIJUANA TO CONSTRUCT ITS OWN TREATMENT FACILITIES. SIX YEARS AGO, I WORKED WITH THE INTER-AMERICAN DEVELOPMENT BANK TO STRUCTURE NEW LOANS TO MEXICO CONTINGENT ON THEIR AGREEMENT TO BUILD ADDITIONAL WASTEWATER TREATMENT CAPACITY. AT ABOUT THE SAME TIME, THE U.S. SIDE OF THE INTERNATIONAL BOUNDARY AND

WATER COMMISSION (IBWC) WAS USING ITS INFLUENCE TO CONVINCE TIJUANA TO EMBARK ON A MAJOR NEW SEWAGE TREATMENT CONSTRUCTION PROGRAM.

THE RESULTS OF THESE EFFORTS HAVE BEEN MIXED. TIJUANA DID CONSTRUCT SOME NEW FACILITIES IN 1986 AND SUCCEEDED IN ENHANCING ITS TREATMENT CAPACITY. HOWEVER, THIS CONSTRUCTION PROGRAM HAS SINCE FALLEN BY THE WAYSIDE. A CHRONIC LACK OF FUNDING AND PROBLEMS WITH THEIR EXISTING FACILITIES HAVE DE-RAILED TIJUANA'S CONSTRUCTION PROGRAM AND NO FIX IS IN SIGHT.

THANKS TO THE COMMENDABLE EFFORTS OF THE IBWC, WE ARE NOW EMBARKED ON A NEW TIJUANA SEWAGE TREATMENT STRATEGY. EPA, IBWC, THE STATE OF CALIFORNIA, AND THE CITY OF SAN DIEGO ARE NOW ALL AGREED THAT THE BEST SOLUTION TO THIS PROBLEM IS THAT WHICH MAKES THE BEST ENGINEERING SENSE -- A TWENTY-FIVE MILLION GALLON PER DAY TREATMENT FACILITY ON THE U.S. SIDE OF THE BORDER.

FINANCING FOR THIS PROJECT WILL BE SHARED BY THE U.S. AND MEXICO WITH DETAILS YET TO BE WORKED OUT BY THE IBWC. IN ORDER FOR THIS PROJECT TO GET ON TRACK, SEVEN MILLION DOLLARS MUST BE APPROPRIATED TO FINANCE THE PLANNING AND DESIGN OF THIS PROPOSED FACILITY. ONCE THIS WORK HAS BEEN COMPLETED, IBWC WILL BE IN A POSITION TO REACH AN AGREEMENT BETWEEN THE U.S. AND MEXICO ON THE PROJECT'S FINANCING.

THE SEVEN MILLION DOLLARS THAT I AM REQUESTING HAS ALREADY BEEN AUTHORIZED AS PART OF THE 32 MILLION DOLLAR TIJUANA SEWAGE AUTHORIZATION THAT WAS CONTAINED IN THE FISCAL YEAR 1984 APPROPRIATIONS BILL.

MR. CHAIRMAN, I CAN'T EMPHASIZE TOO STRONGLY THE NEED TO

RESOLVE THE TIJUANA SEWAGE PROBLEM. ITS RAW SEWAGE CONTAMINATES THE FEDERALLY PROTECTED TIJUANA RIVER ESTUARY AND POLLUTES SAN DIEGO AREA BEACHES. THERE HAS BEEN A FLURRY OF ACTIVITY BY ALL PARTIES CONCERNED RECENTLY -- INCLUDING THE MEXICANS -- AND IT WOULD UNFORGIVEABLE FOR ALL THE GOOD GROUNDWORK THAT HAS BEEN DONE TO BE FOR NOTHING FOR LACK OF FEDERAL MONIES. I URGE YOU TO RECOMMEND THE APPROPRIATION OF SEVEN MILLION DOLLARS FOR THE PLANNING AND DESIGN OF A NEW TIJUANA SEWAGE TREATMENT FACILITY.

THE SECOND PROJECT THAT I WOULD LIKE TO BRING TO THE COMMITTEE'S ATTENTION IS THE SAN JOAQUIN VALLEY AIR QUALITY STUDY. YOU WILL REMEMBER THAT LAST YEAR I REQUESTED $3 MILLION FOR THE FEDERAL SHARE OF THIS $9 MILLION PROJECT. UNFORTUNATELY, THE CONFERENCE COMMITTEE PROVIDED ONLY $1 MILLION AND DELAYED WHAT WAS INTENDED TO BE A ONE-TIME APPROPRIATION FOR THE PROJECT. THIS YEAR, I AM REQUESTING THAT THE REMAINING $2 MILLION BE APPROPRIATED TO ALLOW FOR TIMELY COMPLETION OF THIS CRITICAL STUDY.

THIS STUDY IS VERY IMPORTANT TO THE IMPROVEMENT OF THE AIR QUALITY IN CALIFORNIA'S SAN JOAQUIN VALLEY. TO MOST EFFECTIVELY REDUCE THE POLLUTION IN THE BASIN, WE NEED ACCURATE INFORMATION ABOUT THE SOURCES OF THE POLLUTANTS. IT IS BELIEVED THAT MANY OF THE VALLEY'S AIR POLLUTION PROBLEMS CAN BE ATTRIBUTED TO THE LONG-RANGE TRANSPORT OF POLLUTANTS WITHIN THE VALLEY'S AIR BASIN. THE SAN JOAQUIN AIR STUDY WOULD PROVIDE DETAILED INFORMATION ON HOW THESE POLLUTANTS ARE TRANSPORTED THROUGH THE VALLEY.

IN ADDITION, BECAUSE OF THE TECHNOLOGY INVOLVED IN CARRYING OUT THIS STUDY, IT COULD SERVE AS A MODEL FOR STUDIES IN OTHER PARTS OF THE COUNTRY. FOR EXAMPLE, THE NORTHEAST CORRIDOR

EXPERIENCES SIMILAR AIR QUALITY PROBLEMS DUE TO THE LONG-RANGE TRANSPORTATION OF POLLUTANTS AND COULD CERTAINLY BENEFIT FROM THE RESULTS OF THIS STUDY.

I SHOULD MENTION THAT THE SAN JOAQUIN AIR STUDY ALREADY HAS THE SUPPORT OF THE LOCAL COUNTY OF KERN, THE STATE OF CALIFORNIA, CHEVRON U.S.A. AND OTHER INDEPENDENT OIL PRODUCERS OPERATING IN THE STATE. A THIRD OF THE ESTIMATED $9 MILLION IS BEING BORNE BY THE STATE ALONE, WHILE ANOTHER $3 MILLION WILL BE CONTRIBUTED THROUGH A COMBINATION OF COUNTY GOVERNMENTS AND PRIVATE INDUSTRY SOURCES. A $2 MILLION APPROPRIATION THIS YEAR WOULD FULFILL THE FEDERAL GOVERNMENT'S SHARE OF THE FUNDING NEEDED TO COMPLETE THIS NECESSARY PROJECT.

AGAIN, MR. CHAIRMAN, I THANK YOU FOR THE OPPORTUNITY TO APPEAR HERE TODAY AND LOOK FORWARD TO WORKING WITH THE COMMITTEE ON THIS APPROPRIATIONS BILL.

Senator FOWLER. Thank you very much, Senator Wilson, and we will look forward to working with the newly elected State government of California and any revenue sharing arrangements to finance these very important projects on behalf of our Nation and your State.

Senator WILSON. Thank you, Mr. Chairman.

Senator FOWLER. We are pleased to have Senator Joe Lieberman of Connecticut. Welcome.

STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM CONNECTICUT

Senator LIEBERMAN. Thank you, Mr. Chairman.

My statement will prove that problems of sewage and sewage control stretch from sea to shining sea in America.

For your edification I present to you this picture of the Norwalk Harbor.

I am here today on behalf of the State of Connecticut to seek $100,000 in Federal funds to supplement the $300,000 already committed by the State of Connecticut for the first phase of the Norwalk Harbor Sewage Treatment Demonstration Project.

This project is an unusual one in that it will begin to assist with the biological removal of nitrogen at sewage treatment plants as feasible in colder northern waters. If biological removal of nitrogen is feasible, it will substantially reduce the price tag for upgrading the sewage treatment plants in Connecticut and New York.

One EPA source said that it would cost Connecticut $1 billion, and New York $5 billion to clean up the sewage treatment plants that affect Long Island Sound. If this pilot study works and biological treatment, that is letting loose microorganisms which will eat up the nitrogen, then the cost of Connecticut's upgrade could be as low as $100 million, which is one-tenth of the previously estimated cost.

For the most part, the problem in Long Island Sound is a problem of nutrients creating enormous algae blooms which are visible on this picture. You can see the boat going through the harbor and you see the trail that is left open and the rest of it is all algae.

Norwalk Harbor is actually a miniature Long Island Sound. It's home to significant marine development, to a national wildlife refuge, it boasts an active maritime center, and is recognized as the heart of Connecticut's thriving shell fish industry.

The funds that we are requesting too would clearly help the State complete the first phase of this project, which could have much broader implications than Connecticut or Long Island Sound. I suggest that the Norwalk Harbor pilot project be identified as a special use of unobligated fiscal year 1988 construction grants authorized under section 207 of the Clean Water Act.

As you know, Mr. Chairman, such funds if unobligated by September 30, 1989, are available through a reallotment process to States that have obligated their funds completely, and I'm pleased to say that Connecticut meets this criterion.

I thank you for your time and interest, and we in Connecticut hope for a favorable response from your distinguished committee. Thank you.

Senator **Fowler**. Thank you, Senator Lieberman, very much.

[The statement follows:]

STATEMENT OF SENATOR LIEBERMAN

NORWALK HARBOR DEMONSTRATION PROJECT—SUMMARY

The state of Connecticut is seeking $100,000 in Federal funds to supplement the $300,000 committed by the state for the first phase of the Norwalk Harbor Sewage Treatment Demonstration Project. This project will begin to assess whether biological removal of nitrogen at sewage treatment plants is feasible in northern waters. If it is, this process will substantially reduce the price tag for upgrading sewage treatment plants in Connecticut and New York and greatly diminish the primary pollution problem in Long Island Sound, hypoxia.

The state suggests the Federal Government identify the Norwalk Harbor Demonstration Project as a special use of unobligated fiscal year 1988 Construction Grant funds authorized under Sec. 207 of the Clean Water Act.

NORWALK HARBOR DEMONSTRATION PROJECT, NORWALK, CN

I appreciate the opportunity to testify in support of Federal participation in a demonstration project to improve water quality in Long Island Sound's Norwalk Harbor. On May 3rd of this year, Commissioner Leslie Carothers of Connecticut's Department of Environmental Protection testified in support of this project before the House of Representatives and submitted Governor William A. O'Neill's endorsement. I have enclosed the Governor's letter with my testimony, as well.

Long Island Sound was designated as a National Estuary on March 28, 1988. As such it is recognized as one of the nation's marine treasures and has the commitment of Connecticut and New York to evaluate its problems and implement programs to enhance water quality and preserve this valuable resource for future generations. Connecticut has responded to the needs of the Sound and, through Governor O'Neill's initiative, we are adding a new research vessel, staff, research funds and a library and information center to the management tools for the Sound. We have also been active participants in the federally sponsored study, contributing staff and funds to support the ongoing research.

The most serious water quality problem in the Sound is hypoxia, a condition of low dissolved oxygen. In the western end of the Sound, the hypoxia is so severe that it causes fish kills and other severe impacts on marine life. As the research has progressed, a consensus is building that anthropogenic sources of nitrogen are responsible for nurturing algae which cause the extensive and prolonged hypoxia that occurs each summer. Preliminary results of the water quality model show that by removing nitrogen from sewage treatment plants that discharge to the western basin, the dissolved oxygen levels in the water can be raised by approximately four parts per million, a level sufficient to maintain marine life. In contrast, current levels of dissolved oxygen during hypoxic events are near zero literally suffocating marine life.

Scientists involved with the Long Island Sound Study believe that a high degree of removal of nitrogen from sewage treatment plants on a year-round basis is likely to be required to restore the water quality of Long Island Sound to levels that will support marine life. Because of the site constraints at the treatment plants around the Sound and because the cold winter weather inhibits the biological treatment process required to remove nitrogen, there are serious questions about the implementation of nitrogen removal. Preliminary estimates indicate that it could cost $1 billion to modify Connecticut's sewage treatment plants to remove nitrogen, using conventional technology. The estimate for New York is $5 billion. Whether there are less expensive options and whether nitrogen removal will achieve the desired benefits are questions that urgently need answers.

Connecticut is proposing a demonstration project to answer these questions. Extensive studies of Norwalk Harbor have provided information which indicates that the site at the Norwalk sewage treatment plant offers a unique opportunity to evaluate a nitrogen removal strategy. We are asking for Congress to identify this demonstration project in the budget now and participate with Connecticut in finding the solution to Long Island Sound's hypoxia. We are seeking $100,000 to add to the $300,000 Connecticut will be putting into the feasibility analysis and scale model pilot studies at the treatment plant site.

The proposal consists of three phases:

1. *Feasibility Study and Pilot Plant Demonstration.*—Innovative technologies available for nitrogen removal will be assessed. Based on the review, a 20 to 50 gallon per minute pilot plant will be constructed and operated throughout a year testing different operational modes. Information will be gathered to confirm and optimize literature design criteria. From the information gathered, an engineering report will be prepared recommending a specific design for Norwalk. Total cost is $400,000.
2. *Design of Full-Scale Facilities.*—Based on the Pilot Plant Studies, a set of contract plans and specifications will be developed. Total cost is $4,000,000.
3. *Construction and Operation of Full Scale Facilities.*—Full scale facilities will be constructed and permanently operated to provide 90 percent removal of nitrogen and 70 to 80 percent removal of phosphorus.

Norwalk Harbor suffers from excessive nitrogen loads from the sewage treatment plant and also exhibits severe hypoxia during the warm summer months. Massive fish kills have occurred in recent years because of this problem. In a sense, it is a miniature example of Long Island Sound and will serve as a model of what water quality benefits can be derived through nitrogen removal.

The proposed demonstration project will generate new scientific information regarding nitrogen removal and provide the following benefits:

The pilot plant will demonstrate the technological feasibility of nitrogen removal and optimize design criteria so that the most cost effective facilities can be constructed around the Sound.

Cost figures for upgrading treatment plants around the Sound can be refined so that plans for implementation can be developed when the Long Island Sound study is completed.

Water quality in Norwalk Harbor should improve dramatically, providing direct benefit to the harbor and demonstrating the type of benefits that might be expected in Long Island Sound if nitrogen removal is implemented on a broad scale.

The pilot plant, and later the full-scale facility, can serve as an instructional facility for treatment plant operators throughout the northeast.

A successful project will help to win additional public support for the long-term, costly program that will be necessary to restore Long Island Sound.

In summary, we seek Federal participation in this project because it supports the cleanup objective of the National Estuary Program as well as establishing a model for what can be done by the states and communities around Long Island Sound. Federal resources should be targeted to promotion of innovative, cost-effective solutions to special water quality problems especially along our precious coastline. Such solutions will be the product of this demonstration project.

We appreciate the committee's consideration of this project.

MAY 1, 1989.

Hon. BOB TRAXLER,
Chairman, VA, HUD, and Independent Agencies Subcommittee, House Appropriations Committee, H-143 Capitol Building, Washington, DC.

DEAR CHAIRMAN TRAXLER: I write today to request that the VA, HUD, and Independent Agencies Subcommittee appropriate $100,000 for a feasibility study of year-round nutrient removal at the municipal sewage treatment plant in Norwalk, Connecticut. The State has already allocated $300,000 for this project. The additional Federal funds will allow for nutrient removal to be conducted year-round. To date, year-round nutrient removal has never been evaluated in a cold water climate.

The harbor in Norwalk, Connecticut is a miniature of Long Island Sound. It suffers from "hypoxia," or low-dissolved oxygen from excessive nitrogen inputs. The city of Norwalk's municipal sewage treatment plant has been identified by the Connecticut Department of Environmental Protection (DEP) as the major source of nitrogen in the harbor. The U.S. Environmental Protection Agency (EPA) biologists have been conducting studies of oxygen levels in Norwalk Harbor with DEP since the mid-1970s. The State of Connecticut is interested in continuing this partnership to meet Federal water quality standards. To date, Connecticut has invested $500 million statewide to meet these Federal standards.

The study for which we are requesting Federal funds will be the first of a three-phase pilot project to remove nitrogen year-round from sewage effluent at a large wastewater treatment plant in a cold climate. The total project cost is estimated to be $60 million over four and a half years.

I announced the state's plans for this project when I testified with DEP Commissioner Leslie Carothers before the Long Island Sound Congressional Caucus on February 1, 1989. The results of this pilot project will have major implications for future investments in advanced sewage treatment for the 44 plants that are located in New York and Connecticut that discharge one billion gallons of sewage effluent daily into Long Island Sound. Other estuaries nationwide that have similar problems will also benefit from the knowledge gained in this pilot project.

A package of background information on this project has been provided to your staff. Please feel free to contact my Washington Office (347-4535) if you have any questions or would like additional information.

Sincerely,

WILLIAM A. O'NEILL,
Governor.

Senator FOWLER. I'm extremely pleased to welcome back to the Senate my former colleague in the House, Senator Paul Tsongas of Massachusetts, who is here, I understand, to testify on behalf of the Humane Society of the United States.

Former Senator TSONGAS. And the Massachusetts SPCA.

Senator FOWLER. Welcome, Paul, we are delighted to see you.

STATEMENT OF HON. PAUL E. TSONGAS, FORMER U.S. SENATOR FROM MASSACHUSETTS

Former Senator TSONGAS. Mr. Chairman, I had a chance to look at your schedule today, and it reaffirmed why I left here. [Laughter.]

Senator FOWLER. Well, save a place. [Laughter.]

Former Senator TSONGAS. It will be vacant a long time. [Laughter.]

You have my statement, and I'm not going to read it.

Let me just say that you have been active on the issue of pesticides in agriculture and that kind of thing. In 1986 in the appropriations bill, EPA was mandated to take the lead on alternative testing and to issue reports which they have not done.

Alternative testing is simply a recognition. You see all the pesticides out there and all the toxic substances, and you say to yourself, well, we want to test these so we know what the effects are. Just divide the amount of money we have to test by the number of substances, and you can see that you can't get there from here.

The testimony that was given back 3 years ago said put $16 million in to testing new alternatives, and EPA you take the lead. Were that done, we would be a lot further off toward real testing using alternatives than we are today.

This is an issue where people who disagree on almost everything else can come together. It's good science, it's good economics, and the timing obviously is appropriate. It's a place where scientists and researchers and animal protection organizations can come together because there is common ground. Industry is moving in this direction, and the inertia is in Government.

What we are seeking today is no more than what we thought we had accomplished in 1986, to tell EPA it's your job to lead this effort and to organize it and to spend the money on new alternatives.

Interestingly, the most significant place where this kind of research is being done is at Johns Hopkins, which Senator Mikulski represents. I might recommend that somebody just go out there and see what is being done and see what the breakthroughs are.

You're not going to get any breakthrough on animal testing. It has been done for years, everyone knows how to do it, the time is very long and it's very expensive.

Where the breakthroughs will take place are going to be in alternatives. A lot of work has been done and there are a lot of new things that are out there being used by industry. If EPA could just take it seriously, then I think the work would be done.

Basically what happened was they got a mandate that they did not agree with, and you know what happens inside. They gave you a half report in 1987, nothing in 1988, and nothing in 1989. So the signal is really pretty clear.

If some pressure is brought on them to do what they are supposed to have done in 1986, then I think you will see real progress in this. Then the public, which is concerned about pesticides and other toxic substances, will have some sense that what's out there is going to be tested in a reasonable time period, and right now it's just not going to get done.

I appreciate your interest in it.

Senator FOWLER. Well, I can assure you that I will personally follow through on that, and I will talk to our chairman, Senator Mikulski, about a visit to Johns Hopkins. It would be a good place to start.

I went there 4 years ago and I was very impressed. They are really doing good science and it's something that most people I think can come together on as long as somebody takes the lead.

Former Senator TSONGAS. Right, just takes the lead.

It's good to see you again.

Senator **Fowler**. It's good to see you, Paul, and I wish it could be longer. Give me a call for a cup of coffee when you're in town. I would like to catch up.

[The statement follows:]

STATEMENT OF FORMER SENATOR PAUL E. TSONGAS

Madam Chairman, Members of the Committee, my name is Paul Tsongas and I appreciate this opportunity to appear before you on behalf of the Humane Society of the United States and the Massachusetts Society for Prevention of Cruelty to Animals. While the mandate of these organizations is animal protection, we have been working together on an issue that holds great promise for not only saving animal lives but greatly enhancing human safety. That issue is the development of alternatives to the use of animals in the testing of pesticides and toxic substances.

Just what are alternatives? The term refers to a broad range of technologies and approaches best described as the "three Rs"—replacement, reduction and refinement. That is: replacement of animal test models with non-animal methods such as cell and tissue cultures and computer models; reduction in the numbers of animals used in a test protocol; refinement of techniques to minimize animal pain and distress.

But what has that to do with human safety? At a time of public alarm about pesticide residues in food and toxic substances in household products, the answer is: a lot. There are over 600 pesticides and many thousands of toxic substances on the market that have never been subjected to adequate health and safety testing. Why? Because traditional animal tests are costly and time consuming. For example, the most widely used method of testing for carcinogens are lifetime feeding studies in rodents. The cost of performing a single one of these tests ranges from half a million to two million dollars and takes three to four years to complete.

In contrast, a battery of short term cell culture and related tests costs around $50,000 and takes three to four months to complete. And these short-term tests have a high level of reliability.

Other alternatives have been developed to determine whether drugs injected into humans are fever-producing; whether cosmetic substances are harmful to the eyes; and whether certain chemicals cause birth defects. Even the diagnostic kit used in human pregnancy testing is an alternative.

As you can see, alternatives are not just a pipe dream. Alternatives are already here and they are here to stay. As the 1986 landmark report of the congressional Office of Technology Assessment concluded, alternatives testing is already saving the lives of many animals and by pushing the frontiers of science, promises to save many human lives as well. In many instances, alternatives are faster, more reliable and less costly than traditional animal tests. Time, health and economics are compelling reasons to do much more to develop new alternatives.

I would propose that Congress take three steps to advance the development of alternatives.

First, EPA should be mandated to allocate increased resources from its research and development budget to development of new alternatives. Some of that money would be channeled through an extramural grants program to such pioneering entities as Maryland's Johns Hopkins Center for Alternatives to Animal Testing.

Second, EPA should be specifically charged with coordinating the development of new alternatives throughout the government—a step that will cut the institutional inertia and resistance that, according to the OTA Report, holds back greater progress in developing alternatives.

Third, I would urge you to encourage all Federal agencies with appropriate jurisdictional responsibility to develop plans for alternative technologies. Within each agency there are scientists, researchers and policy-makers committed to the development of alternatives. By prompting the agencies in which they work to devote additional attention and resources to this important endeavor, Congress will be giving them the tools they need to achieve success.

Thank you.

HEARING PROCEDURE

Senator **Fowler**. Ladies and gentlemen, I would like to go over very quickly the procedure for this morning's hearings because of the number of witnesses.

It's not a very satisfactory system from your standpoint, I realize. I know that you have all worked hard on your testimony and that the organizations and efforts that you will represent this morning are not only worthy, but have spent considerable effort in preparing the fullest possible testimony in order for us to know what your needs and priorities are.

There are only 100 of us out of 248 million Americans, and we have not found a very satisfactory way to allow all of the public witnesses and these very fine constituencies that you represent to have what you consider a full day in court. We have to follow a very strict 3-minute rule. We've got seven panels just this morning with four or five people on each panel.

Your full statements will be made a part of the record and will be studied by this array of bureaucracy behind me. [Laughter.]

But it would be extraordinarily helpful to all of us and to everybody else that has got to testify this morning. We'll have a light system here, and we've got to cut you off in 3 minutes. It would be very helpful to me who is going to sit here and listen to you for you to summarize and give me your priorities and let me know eyeball to eyeball where our attention ought to be directed, and then we will submit for the record that long testimony.

I know sometimes it scares you and you feel like you've got to read, but it would be a lot more helpful to me and to the members of the committee for you just to put that testimony aside and spend your 3 minutes just telling me in your own words what programs have worked, what haven't worked, what's successful, where we need to enhance funds, and where we possibly have done the job hopefully. That's rare, but if our work has been successful, tell us that, and where we might be able to direct that money somewhere else.

So watch the lights and don't make me stop you. The yellow light will light up when you've got 1 minute left, and then when the red light goes on, please help me in moving on.

PANEL 1

Will panel 1 please come up. The National Association of Private Residential Resources, Consortium for Citizens With Disabilities and others, and I'll introduce you one by one.

I have five down here, Council of Large Public Housing Authorities; the National Caucus and Center on Black Aged, Inc.; the American Association of Retired Persons National Legislative Council, along with those that I have just mentioned.

Good morning. While we're getting settled in, I think we'll go from right to left and let you introduce yourself and your organization and go to it.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

STATEMENT OF DAVID AFFELDT, GENERAL COUNSEL, NATIONAL CAUCUS AND CENTER ON BLACK AGED, INC.

Mr. **AFFELDT**. My name is David Affeldt. I am counsel for the National Caucus and Center on Black Aged, and I'm appearing in place of Samuel Simmons, who was originally scheduled to testify.

Senator **FOWLER**. Fine. Please proceed.

Mr. Affeldt. Thank you.

The National Caucus and Center on Black Aged, Senator Fowler, has basically six recommendations which I will summarize for the fiscal year 1990 appropriations bill.

First, there should be sufficient funding to continue public housing and the section 8 existing and moderate rehabilitation programs at their current levels. This translates to approximately 5,500 new public housing starts, about 4,200 moderate rehabilitation units, including single room occupancies for the homeless, and 18,000 section 8 existing units.

Second, the public housing modernization and operating subsidies programs should be continued at a minimum, at their 1989 amounts and preferably at higher levels if budgetary conditions permit.

Third, there should be sufficient lending authority to finance at least 12,000 section 202 units for the elderly and the handicapped.

Fourth, report language should be included to direct HUD to promote increased minority sponsorship of section 202 housing by providing greater technical assistance to minority applicants.

Fifth, the congregate housing services program should be funded at $10 million. This would finance an additional 50 projects above the estimated 61 projects that would be funded under the fiscal year 1989 appropriation.

Finally, the subcommittee should approve report language to call upon the Environmental Protection Agency to make greater use of senior environmental employment enrollees, SEE enrollees to assist EPA in discharging its duties.

SEE enrollees have amply demonstrated their value to EPA by performing many useful tasks, such as inspecting schools for the presence of asbestos, monitoring the quality of air and water, checking underground storage tanks for leaks and other tasks as well.

Greater utilization of SEE enrollees would assist the EPA in discharging its duties during these austere times. At the same time, it would provide an opportunity for older Americans to engage in purposeful activity and to earn income to improve their economic well being.

Thank you for this opportunity to present this testimony.

NCBA will be glad to respond to any questions you may have.

Senator Fowler. Do you work in rural housing?

Mr. Affeldt. NCBA's housing is in both urban and rural areas.

Senator Fowler. But predominantly urban?

Mr. Affeldt. Predominantly urban, yes. For example, we have a housing project in Washington, DC, which has approximately 170,000 units.

Senator Fowler. Do you take any position on vouchers, housing vouchers?

Mr. Affeldt. NCBA has taken the position that vouchers are not likely to yield additional housing units, and it may just contribute to adding to the overall cost of housing for people without really appreciably dealing with the housing problem, particularly as it affects older blacks and other low-income elderly minorities.

Senator Fowler. Thank you very much.

Mr. Affeldt. Thank you, too, Senator.

[The statement follows:]

Statement of Samuel J. Simmons, President, National Caucus and Center on Black Aged, Inc.

Madam Chairman and Members of the Subcommittee, the National Caucus and Center on Black Aged appreciates the opportunity to testify on the fiscal year 1990 VA-HUD-Independent Agencies Act. As you have requested, NCBA will limit its testimony to three minutes.

NCBA is recommending that the Subcommittee approve the following measures for the fiscal year 1990 VA-HUD-Independent Agencies Appropriations Act.

First, there should be sufficient funding to continue public housing and the section 8 existing and moderate rehabilitation programs at their current levels. This translates to approximately 5,500 new public housing starts, about 4,200 moderate rehabilitation units (including single room occupancies for the homeless), and 18,000 section 8 existing units.

Second, the public housing modernization and operating subsidies programs should be continued, at a minimum, at their 1989 amounts and preferably at higher levels if budgetary conditions permit.

Third, there should be sufficient lending authority to finance at least 12,000 section 202 units for the elderly and the handicapped.

Fourth, report language should be included to direct HUD to promote increased minority sponsorship of section 202 housing by providing greater technical assistance to minority applicants.

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SEE enrollees have amply demonstrated their value to EPA by performing many useful tasks, such as inspecting schools for the presence of asbestos, monitoring the quality of air and water, checking underground storage tanks for leaks, and others.

Greater utilization of SEE enrollees would assist EPA in discharging its duties during these austere times. At the same time, it would provide an opportunity for older Americans to engage in purposeful activity and to earn income to improve their economic well being.

Thank you for this opportunity to present this testimony. NCBA will be glad to respond to any questions that you may have.

STATEMENT OF BONNIE MILSTEIN, SENIOR STAFF ATTORNEY, MENTAL HEALTH LAW PROJECT, ON BEHALF OF CONSORTIUM FOR CITIZENS WITH DISABILITIES

Senator Fowler. Good morning.

Ms. Milstein. Good morning, Senator.

My name is Bonnie Milstein. I am senior staff attorney at the Mental Health Law Project, and I am here this morning representing the Consortium of Citizens with Disabilities.

The Consortium represents 60 organizations whose mission is to advocate the rights of people with disabilities.

This morning I am addressing only one program in HUD, and that is the budget for the Fair Housing and Equal Opportunity Office.

The appropriations set for that budget is $10 million. Yet, because of legislation that was enacted and which we support, HUD actually only has $5 million of the $10 million to spend.

It is our belief, based on reviewing——

Senator Fowler. Where is the other $5 million?

Ms. Milstein. The other $5 million goes to the FHIP program, the Fair Housing Initiatives Program, which is a program through which HUD contracts with both State agencies and private non-profit organizations to conduct education and enforcement activities with regard to housing civil rights programs.

It is a very good program and we support it, but nonetheless it's important to understand that when the appropriation says $10 million, $5 million of it is all that HUD gets to conduct its own programs.

Last year, the Congress enacted a significant piece of civil rights legislation, and that was the amendment of the Fair Housing Act. Under the amendments that were enacted last year by Congress, the Fair Housing Act now provides protection to both people with disabilities and to families with children.

In order to make the Fair Housing Amendment Act work as the Congress intended, $5 million is far too little to be appropriated to HUD's Fair Housing Equal Opportunity Office. That office is responsible not just for enforcing the Fair Housing Act, but for enforcing all of the Civil Rights Acts that the Congress has enacted over the years.

To give you some sense of why that amount of money is much too little, under the Fair Housing Amendments Act alone HUD must assign staff at headquarters in the regions to provide technical assistance to States to enact substantially equivalent laws.

It must hire architects at each regional office to enforce the structural changes that are required by the Fair Housing Amendments Act.

It must hire investigators, lawyers, and administrative law judges to process a case load that has already increased by 50 percent in spite of the fact that the Fair Housing Amendments Act became effective only 2 months ago.

All of this new staff, this new enforcement staff, must meet 100-day deadlines that the Congress has imposed so that HUD completes investigations and issues charges of findings within a reasonable period of time.

My yellow light is on. So I cannot continue, but there are, as you know, a series of responsibilities that HUD must perform if the Congress' promise that equal opportunity to minorities, people with disabilities, and families with children is to be fulfilled.

Thank you, Senator.

Senator FOWLER. I'm very impressed by your legal-like presentation and precision, Ms. Milstein. Thank you very much.

Ms. MILSTEIN. Thank you, Senator.

[The statement follows:]

STATEMENT OF BONNIE MILSTEIN

SUMMARY OF CCD HOUSING TASK FORCE RECOMMENDATIONS

The Housing Task Force of the Consortium for Citizens With Disabilities (CCD) respectfully makes the following recommendations for fiscal year 1990 appropriations levels for programs administered by the Department of Housing and Urban Development (HUD).

* Given the critical need for expanded supplies of all forms of low income housing, the Consortium recommends that the Department's budget for such housing be increased. Specifically, the Consortium supports the recommendations of the Association for Retarded Citizens and the National Association of Private Residential Resources. Copies of their testimony are attached.

* In addition to recommending increased support for building funds, the CCD Housing Task Force strongly recommends that HUD's budget for the enforcement of Section 504 of the Rehabilitation Act of 1973 and for the enforcement of the Fair Housing Amendments of 1988 be expanded. With the publication of Section 504 regulations and the enactment of the Fair Housing Act Amendments, HUD's responsibilities have been considerably expanded. An adequate enforcement program requires that HUD have the funds for an adequate number of staff positions.

* Section 8 Rental Certificates and Housing Vouchers play an important role in making housing affordable to people with disabilities. The CCD Housing Task Force recommends funding for Section 8 Existing Rental Certificates, which the administration proposes to zero out, that is comensurate with funding for housing vouchers.

INTRODUCTION

The Consortium for Citizens with Disabilities (CCD) is a working coalition which is comprised of over 60 consumer, provider and professional agencies advocating on the behalf of persons with disabilities. The Housing Task Force of the CCD is submitting this testimony.

FAIR HOUSING AMENDMENTS ACT OF 1988

In 1988 Congress amended the Fair Housing Act of 1968 to prohibit discrimination against individuals with disabilities and against families with children. Congress also broadened the government's enforcement powers considerably. The newly amended law requires private and public housing providers to accommodate the needs of people with disabilities by, for example, modifying housing policies and practices that result in discrimination. The law also requires that new multifamily housing be designed and built that is structurally adaptable.

As a result of these amendments, the Department of Housing and Urban Development (HUD) issued regulations on January 23, 1989 to interpret the law. According to the law and the regulations, HUD now has vastly increased responsibilities. Never before was HUD responsible for enforcing equal opportunity requirements for the private housing and real estate market. In order to make the law a reality, HUD must initiate an extensive public education and technical assistance campaign. It must work with consumers, providers, and state agencies to inform them of the requirements of the Fair Housing Amendments Act, and to enforce those requirements.

The FY 1989 Appropriation has been set at $10 million dollars. The CCD Housing Task Force is recommending that the appropriation be doubled to $20 million dollars. The increase in spending will pay for the increased staff requirements that must be filled if HUD is to do an adequate job in enforcing the law. One of the requirements of the Act is that HUD complete its investigations of Fair Housing complaints and issue a finding within 100 days. The law also requires HUD to conduct administrative hearings with specially designated Administrative Law Judges. Hundreds of complaints of discrimination under the new amendments will be filed before the end of FY 1990. With its current staff, HUD will not be able to meet its 100 day deadlines, or be able to train its regional staff and provide appropriate technical assistance to providers and consumers.

Nor may HUD spend its entire appropriation on the training of HUD staff and agency enforcement of the law. According to the Fair Housing Initiatives Program (Section 561 of the Housing and Community Development Act of 1987), HUD must allocate half of its Fair Housing Activities funds to state and non-profit grantees and contractors. This two-part enforcement program enables HUD and public and private organizations to enforce the Act. We strongly favor this split of the funds, but the $5 million allocated to HUD and the $5 million allocated to state and non-profit agencies in this critical start-up period is insufficient to cover their enforcement, education and technical assistance costs.

Before the enactment of the 1988 Amendments to the Fair Housing Act, HUD's education, technical assistance and enforcement efforts were aided by states which had "substantially equivalent" Fair Housing laws. Currently, not a single state has a "substantially equivalent" law because no state legislature has amended its laws to incorporate the essential elements of the Amendments. Thus, in addition to being solely responsible for interpreting and enforcing the new provisions of the Fair Housing Act, HUD will also be required to assist the states in their efforts to enact equivalent laws.

Congress's intent to provide new housing opportunities to people with disabilities will be thwarted if the law is not widely publicized and enforced. There will be no other time in history when HUD will have as appropriate an opportunity to establish the equal opportunity policies of the Fair Housing Amendments Act. It will cost HUD considerably more than $10 million to do so, but if it succeeds, with the help of those participating in the Fair Housing Initiatives Program, it will promote the kinds of change in attitude, policies, practices and building designs that will yield priceless benefits and cost-efficient benefits in the future.

SECTION 504 OF THE REHABILITATION ACT OF 1973

Section 504 prohibits the expenditure of federal funds, primarily through grants, contracts and federally conducted programs, on discrimination against people with disabilities. For example, Section 504 requires that all public housing programs be conducted in a way which promotes the equal opportunity of consumers with disabilities to gain access to housing.

With the exception of HUD, all executive agencies issued regulations to implement the law's requirements of federally assisted programs in 1978. HUD published proposed regulations in 1978 and again in 1983. However, the agency did not publish final regulations until June 1988. Without regulations, HUD did not enforce the mandate of Section 504 in the vast majority of public housing authorities or subsidized private housing programs. It is now HUD's clear responsibility to do so.

Like the Fair Housing Amendments Act, Section 504 requires housing providers to alter their policies and practices which have the effect of discriminating against people with disabilities. They must do so in all aspects of their programs -- admission, eviction, management, structural rehabilitation, new construction, etc. There is substantial confusion in the real estate industry as to what Section 504 and the Fair Housing Amendments Act require. In order to promote the rights of people with disabilities, HUD is obligated to conduct the education, technical assistance, and enforcement campaign necessary to address this confusion.

However, in addition to educating the public, HUD is also obligated to educate its own staff in Washington and in the regions as to the requirements of the two laws. Currently, because HUD has offices which specifically address the housing needs of individuals with disabilities, other program staff, such as those in the Office of Housing, are unaware that they, too, are required to incorporate the mandates of Section 504 and the Fair Housing Amendments Act into their policy-making and management activities.

The combination of internal and country-wide education and technical assistance programs required by the two Acts suggests that Congress should direct HUD, through language in the FY 1990 HUD appropriations bill, to increase the number of positions and upgrade the grade levels of the positions within the Office of Fair Housing and Equal Opportunity. It is clear that HUD will be unable to process the already increased number of complaints and enforce the law without substantially increasing its policy, investigative and legal staff in Washington and in the regions.

SECTION 8 RENTAL CERTIFICATES AND HOUSING VOUCHERS

The Section 8 rental certificate and housing voucher programs may be the most cost-effective methods of supporting housing for people with disabilities where decent, affordable housing is available.

The CCD Housing Task Force recommends that increased funding be provided so that more people with disabilities can obtain Section 8 certificates or housing vouchers to offset costs associated with renting existing housing. We also urge the Congress to instruct HUD to give preference to people with disabilities who are on waiting lists to obtain vouchers.

The administration has proposed to only fund housing vouchers in its FY 1990 budget. The CCD Housing Task Force recommends that the Section 8 Existing Certificate program be funded at a level commensurate with the funding of housing vouchers.

Senator **Fowler**. I am joined by my colleague, Senator Grassley of Iowa, whom I invite to, we're moving fast, but to jump in with questions at any time he desires.

Senator **Grassley**. Thank you. I'll be here until about 10 minutes to 11, and then I have a Judiciary Committee that I'll have to go to.

Good morning.

STATEMENT OF PETER SAJEVIC, NATIONAL ASSOCIATION OF PRIVATE RESIDENTIAL RESOURCES

Mr. **Sajevic**. Good morning.

Mr. Chairman and members of the committee, we at the National Association of——

Senator **Fowler**. What's your name?

Mr. **Sajevic**. My name is Peter Sajevic, and I'm a provider of residential services for people with disability in Minnesota, and a member of the National Association of Private Residential Resources.

We appreciate the opportunity to testify, and have also presented written testimony for your review.

Our association views HUD as an important and vital resource for people with disabilities in providing housing resources, support services, and opportunities necessary for people with disabilities to achieve full participation in the community and to enable this important population the exercise of the rights of citizenship.

The need for appropriate affordable housing far exceeds the supply, and this problem is magnified by the fact that many States right now are phasing out institutions and the need for housing grows and grows.

We want to take a look at a couple of programs under the review of this committee.

SECTION 202 DIRECT LOAN PROGRAM

First of all, the section 202 direct loan program. We have two requests within that program. One, we would like to see at least the minimum authorization of 3,000 units set aside for people with disability. We see a need for a floor in that area.

Second, we ask Congress to add technical language to implement the intent of Congress in converting pipeline projects to the new subsidy mechanism to avoid some problems in development programs that have already been authorized but are caught between two different systems and we need technical language to that effect.

With regard to section 8, this is historically perhaps the most important of all HUD programs in opening the doors of opportunity for people to gain either self-dependence or semi-independence. Because of section 8, many people have been able to obtain their own housing or apartments who otherwise would not have had the opportunity based on income.

Many people continue to live in supported services because there are not alternative living options available. We would request from Congress the authorization of 100,000 additional units funded under the section 8 voucher program for people with disability.

Another program that we see as a very critical, valuable, and necessary resource for people with disability both directly and indirectly is a community development bloc grant program. Cities, and particularly inner cities, are struggling with blighted vacant housing, crack houses, and problem housing that demand help, and the vehicle for help is neighborhood revitalization.

COMMUNITY DEVELOPMENT BLOC PROGRAM

Because many people with disabilities need services and transportation within these areas or need that access to these areas, they suffer then from this blighted condition, and the community development bloc program offers the kind of partnership building at a grass-roots level that can include people with disabilities in forging their own neighborhood and their own community, and this has been successful in many areas so far.

We also would agree with the previous speaker that the Fair Housing Act is a critical act, and we would ask Congress to direct the Department of Justice to work with HUD in helping cities and localities come into compliance with the intent of that statute and request that type of authorization. We see that as educational before enforcement and to that extent we would request that of the committee.

Thank you.

Senator **Fowler**. The 3,000 units that you're asking for the setaside, is there any setaside under section 202 now?

Mr. **Sajevic**. Typically, there is a 25 percent setaside, and I think the 12,000 request that is being made in total would represent the 3,000 for people with disability.

Senator **Fowler**. The 3,000 is included in the 12,000?

Mr. **Sajevic**. The 3,000 would be included in the 12,000.

Senator **Fowler**. Nationwide?

Mr. **Sajevic**. Nationwide, and we see a need for a floor. There has been a continuing decline, and there needs to be that kind of stable, long-term plan.

Senator **Fowler**. I understand.

Thank you very much.

Yes, sir.

STATEMENT OF GERALD ADAMS, ASSOCIATION FOR RETARDED CITIZENS OF THE UNITED STATES

Mr. **Adams**. I am Gerry Adams, and I am here representing the Association for Retarded Citizens of the United States. I am grateful for this opportunity, Senator Fowler, to speak with you.

Senator **Fowler**. Welcome.

Mr. **Adams**. The Association for Retarded Citizens of the United States has had for more than a decade now the priority of serving people in community based settings. In order to do that, we have become quite dependent on many of the programs of HUD to provide the housing necessary and the other options necessary for persons in the community as opposed to institutional settings.

HIGHLIGHTS OF PROGRAMS

So to keep it brief, I will just highlight some of those programs that we found very helpful and entreat your support and the committee's support for the funding levels of these various programs.

The foremost program, of course, is the HUD section 202 program and we, like other groups that are providing services to persons with disabilities, are asking for an allocation of about $630 million. That would represent that 12,000 section 202 units that we were talking about, 25 percent of which should then be set aside for persons with disabilities. It has been stated that those represent a decline really in housing units from the inception of this program.

Senator FOWLER. Now again, that 25 percent includes mental as well as physical disabilities?

Mr. ADAMS. That's correct.

While we are on the topic of section 202, my colleague here has also mentioned that there is a problem in some of the language of the Housing and Community Development Act of 1987 which has caused some programs that were in the pipeline to get caught.

The act of 1987 did create a project-based subsidy. So programs are no longer tied to the section 8 rental subsidies to amortize their loans. Programs that were in trouble through the old system, the intent of the law was to enable those projects to then convert over to the project-based subsidy. They have not been able to do so because of the language of the law, and we ask that we study that together and come up with some new language.

Other programs that are particularly helpful. The ARC has been involved in a technical assistance project that has been designed to identify creative means of financing and designing housing for persons with disabilities. That project ends this year, and we ask that it and similar projects, like technical assistance projects, be continued in the appropriation.

We are also asking for $20 million to implement the Fair Housing Amendment Act and $10 million for the Congregate Housing Services Program, which is a program that assists persons once they have received assistance in obtaining housing to maintain that housing and to live independently so that they don't return to institutions. That program has been earmarked by the administration to be zeroed out. Once again, this is a number of years in a row.

LEAD-BASED PAINT POISONING

We are also asking for an increased appropriation for HUD research programs designed to study lead-based paint poisoning because it's one of the primary causes of mental retardation.

ASSISTANCE FOR THE DISABLED

We are also asking for $105 million for the McKinney Supportive Demonstration Program, which is designed to help persons with disabilities who are homeless to have permanent housing.

Thank you very much.

Senator Fowler. Are we making any progress on the acceptance of housing for the retarded in neighborhoods?

Mr. Adams. I would say in my experience in 15 years in some places we have made a great deal of progress. A lot depends on how we look to the rest of the neighborhood in terms of are we building housing and are we putting the numbers of people in those houses that fit into the neighborhood pattern.

Senator Fowler. Or where they feel like they are being overwhelmed.

Mr. Adams. That's right. Initially, when I first started in this business I was a house counselor in a group home—one of the first group homes in Maryland—there were 14 people living in that home, and the neighbors were quite up in arms about that, and rightly so. We are seemingly constantly looking for that magic number, and I don't think there is a magic number. We should be serving people in the numbers that meet their needs and help them integrate into the neighborhoods.

Senator Fowler. Thank you, Mr. Adams, very, very much.

[The statement follows:]

STATEMENT OF GERALD ADAMS

SUMMARY OF THE ASSOCIATION FOR RETARDED CITIZENS OF THE UNITED STATES RECOMMENDATIONS FOR FISCAL YEAR 1990

The Association for Retarded Citizens of the United States (ARC) respectfully submits the following recommendations for fiscal year 1990 appropriation levels for the Department of Housing and Urban Development (HUD). Recommendations of the ARC focus on HUD initiatives that are assisting individuals with disabilities living in the community. The ARC recommends:

- An appropriation of $630 million for the HUD Section 202 Program. This program is extremely important because it is the only capital financing mechanism within HUD specifically designated for housing for people with disabilities. This would ensure the development of approximately 12,000 new Section 202 units with at least 3,000 of these targeted for persons with disabilities.

- The inclusion of language in this appropriations bill to specify that funds from Section 8 certificates attached to Section 202 "pipeline projects," that would benefit by conversion to the new Section 202 project-based subsidy program, be applied to the new subsidy. This change would reflect the intent of Section 162 of the Housing and Community Development Act of 1987 (P.L.100-242).

- An appropriation level of $20 million for HUD's implementation of the Fair Housing Amendments Act. In addition to being solely responsible for interpreting and enforcing the new provisions of the Fair Housing Act, HUD will also be responsible for assisting states in their efforts to enact "substantially equivalent" laws.

- An appropriation level of $10 million for the Congregate Housing Services Program which the Administration budget has proposed to zero out. This program is a unique initiative to ensure that those living in HUD funded housing in the community can continue to have the support necessary to permit them to live independently.

- The Community Development Block Grant Program be funded at the level of $3 billion. This is the amount that was appropriated for this program in FY 1989 and the amount that is fully authorized for FY 1990. This program can assist state and local governments in planning and implementing diverse community living options which can benefit large numbers of individuals including those with disabilities.

- Full funding for the McKinney Supportive Housing Demonstration Program for FY 1990 with $25 million of this $105 million appropriation targeted for the Permanent Housing Demonstration Program. This can increase the availability of housing options for individuals with disabilities who are homeless and who need to find permanent housing.

- Inclusion of language within this appropriations bill that calls for the continuation of innovative technical assistance projects, such as the Housing Technical Assistance Project-a joint effort of the National Association of Home Builders and the ARC, which are designed to expand the availability of housing for individuals with disabilities through a variety of means including financing and design options and the effective application of civil rights legislation.

INTRODUCTION

Mr. Chairman, Committee Members... my name is Jerry Adams. I am Executive Director of Ardmore Enterprises, Inc., a multifaceted agency that provides vocational/employment, transportation and residential services to persons who are developmentally disabled. In addition, I work as a housing and human services consultant to several private, non-profit agencies including the Association for Retarded Citizens of Prince George's County.

This year the Association for Retarded Citizens of the United States is marking its 39th year of nationwide service to persons with mental retardation. The ARC counts among its membership over 160,000 individuals across the nation who are part of, or work on behalf of, the over six million United States citizens with mental retardation.

For over a decade, a priority ARC concern has been, and continues to be, the establishment of community-based services for individuals with mental retardation. Concomitant with this goal is the deinstitutionalization of persons residing in large, frequently inadequate residential settings which many persons with mental retardation have been forced to call home. Our success in these efforts and the success of our 1,300 state and local affiliates around the country are extremely dependent upon the availability of affordable, accessible community-based housing, or access to the means to develop such housing.

As a result, the people whom we represent, and those who provide services for them, depend on programs available through the Department of Housing and Urban Development (HUD) to spur the development of, and ensure access to a variety of community-based housing options.

The ARC was instrumental in the both the enactment of legislation to expand the Section 202 Direct Loan program to include housing for persons with disabilities and in revisions to the program mandated through the Housing and Community Development Act of 1987. These revisions were designed to ensure that the program was appropriate in meeting the housing needs of persons with mental retardation and to assist in the efforts of non-profit sponsors to develop this essential housing. The ARC, through its state and local chapters, has become one of the largest sponsors of community-based housing for persons with mental retardation. In 1987, 84 projects for persons with mental retardation were funded by HUD. Of these, 31 were ARC sponsored.

TECHNICAL ASSISTANCE

Historically, the private housing market has not produced sufficient housing to meet the needs of persons with disabilities. However, there is potential for improvement in this area. Because of language included, also with ARC advocacy, in the Housing and Community Development Act of 1987, a technical assistance project was funded by HUD to identify creative means of financing and designing housing for persons with disabilities. The ARC is a sub-contractor on this project, coordinated by the National Association for Home Builders National Research Center. This project is, unfortunately, in the last year of its two year tenure.

It is imperative that appropriations legislation include adequate funding in both the Fair Housing Initiativas Program and HUD Research and Development for the continuation of this type of innovative technical assistance. Projects of this type must be designed to expand the availability of housing for persons with disabilities, not only through creative financing and design options but also through the effective application of civil rights legislation.

HOUSING AVAILABILITY

At the present time, however, the lack of availability of affordable housing continues to be a major problem for persons with disabilities. Therefore, the continuance and expansion of assisted housing programs which ensure prompt new construction, acquisition and rehabilitation, and rental subsidies, are all of concern to our constituents.

Although the Section 202 Loan program is the federal program which has most visibly contributed to expanding housing options for persons with mental retardation, there are many other ways in which HUD initiatives are assisting persons with disabilities living in the community.

O The Community Development Block Grant program has been helping organizations to acquire rental housing and to provide funds for rehabilitation for accessibility to meet the needs of tenants with disabilities.

O The Congregate Housing Services Program has also been a unique initiative to ensure that those living in HUD-funded housing in the community will have the supports necessary to permit them to continue to live there independently, thus avoiding unnecessary institutionalization.

O The Permanent Housing Program for Handicapped Homeless Persons, part of the McKinney Supportive Housing Demonstration Program, provides needed permanent housing for persons with disabilities and their families who are homeless or at risk of becoming homeless. The ARC applauds the Congress and the administration for their intent to fully fund the Supportive Housing Demonstration Program for FY 1990. Unfortunately, due to the newness of the Permanent Housing Program and difficulties in meeting the requirement for states to match 50 percent of the federal share, it has been underutilized. Last year the Congress modified the rules governing that match to allow more flexibility in meeting the requirement, but many states were unaware of this change. As more states are aware of this and other changes in the program, utilization will increase.

O The Fair Housing Amendments Act of 1988 has the potential to greatly expand the availability and accessibility of housing for persons with mental retardation--if strong and consistent enforcement is a major HUD priority.

Access to community-based housing alternatives that offer persons with disabilities the opportunity for more normalized and integrated living situations frequently also results in lessening the federal support dollars required for institution-based care. It is therefore with great concern that we have observed the continuing drastic decline in federal appropriations for assisted housing and a very large increase in Medicaid costs for institutional care. If one uses subsidized housing unit reservations for the Section 202 program as only one example of this decline, there has been a drop from 29,875 units in FY 1976 to 7,000 units proposed for FY 1990 in the Administration budget.

The ARC recognizes the on-going budget restrictions imposed by the serious federal deficit problems. It also recognizes that the growth in the federal deficit is, interestingly enough, quite the opposite of the decrease in the number of assisted housing options that are available for low-income individuals over the same approximate period of time.

ARC RECOMMENDATIONS

This decade-long, historical decline in the availability of housing for individuals with low incomes, coupled with an increase in the number of individuals who are, or may become, homeless, and the need to provide affordable housing to our most at-risk citizens demands continued and expanded federal support. Therefore, the ARC recommends the following funding levels for specific assisted housing programs, and for the enforcement of the Fair Housing Amendments Act of 1988.

O For Section 202, we recommend an appropriation of $630 million for FY 1990. This would ensure the development of approximately 12,000 new units with at least 3,000 of these specifically targeted for persons with disabilities.

The Housing and Community Development Act of 1987 created a new project-based subsidy which is to be used for Section 202 projects for persons with disabilities. In addition to new projects, this law authorized assistance for "pipeline projects" which are experiencing problems. While the ARC and other disability groups are excited over the promise of this new program, it has come to our attention that "pipeline projects" which are experiencing difficulties are unable to convert from Section 8 Rental Assistance and accompanying fair market rates to the new project-based subsidy as was the intention of the changes in the law. Currently, Section 8 budget authority reservations that are recaptured are required by law to be rescinded. Therefore, it is vital that the Appropriations Subcommittee add language to this Appropriations bill to permit Section 8 budget authority reservations for Section 202 pipeline projects to be converted to the new subsidy mechanism authorized in Section 162 if they are experiencing difficulties. The ARC will be glad to provide the Committee with specific language for this change.

O For the Congregate Housing Services Program, which the Administration budget proposed to zero out, the ARC recommends an appropriation level of $10 million. Over the past several years funds for these services have been reduced substantially. Adequate funding for this program would ensure the continued provision of a variety of community-based services to assist individuals with mental retardation to continue to live independently in the community.

O For Community Development Block Grants, the ARC recommends continuation of the current level of appropriation, $3 billion in FY 1990.

O For the Supportive Housing Demonstration Program, the ARC supports full funding for FY 1990 and recommends that the Permanent Housing for Homeless Handicapped Persons also be specifically earmarked for funding at $25 million.

O For HUD's implementation of the Fair Housing Amendments Act of 1988, we recommend an appropriation level of $20 million for FY 1990. In addition to being solely responsible for interpreting and enforcing the new provisions of the Fair Housing Act, HUD will also be required to assist the states in their efforts to enact equivalent laws. The recommendation of $20 million dollars will finance the national education and enforcement programs necessary to fulfill the obligations of this new civil rights law. The ARC also recommends that a portion of these funds be set-aside to provide education and training for people with disabilities and their advocates regarding their rights under the Act.

O For the HUD Research Programs, an appropriation of $21.4 million with a substantial amount of this appropriation going to the Lead-Based Paint Poisoning Prevention Program. This is an area of concern to the ARC because of the emphasis we place on the prevention of mental retardation.

Madam Chairman, I want to thank you and the Committee for the continuing interest you have shown in the housing needs of persons with disabilities. The ARC is prepared to assist you if you desire any further information. Again, I thank you for allowing me to appear before you today.

STATEMENT OF JOHN MC CAULEY, DEPUTY EXECUTIVE DIRECTOR, HOUSING AUTHORITY OF BALTIMORE CITY, ON BEHALF OF THE COUNCIL OF LARGE PUBLIC HOUSING AUTHORITIES

Senator FOWLER. Good morning.

Mr. MCCAULEY. Senator, my name is John McCauley. I'm the Deputy Executive Director of the Housing Authority of Baltimore City, and I'm here this morning on behalf of the Council of Large Public Housing Authorities.

The council represents about 50 of the largest Public Housing Authorities in the country and, by our calculation, manage about one-third of the units that are included in the Nation's public housing program.

I have just a couple of points to make.

One is, by our calculation we have suffered underfunding in fiscal year 1988 of $90.1 million, and in fiscal year 1989 of $125.6 million in operating funds. We do hope that that gets made up this year if that can be done.

For the budget year ahead, we are asking for operating subsidies of funding in the range of $1.867 billion. Operating subsidies, as you know, is the funding that is absolutely essential to the management of our properties, the maintenance of them, paying for utilities, security costs, social services, and all of the things necessary to run these properties on a day-to-day basis.

In the modernization area, we are requesting funding in the level of $2.5 billion. By HUD calculations and other calculations, this is considerably short of what is necessary to make up considerable past deferral of maintenance for public housing, but we recognize that $2.5 billion is a number that we think is respectful of your situation.

We have asked for a lead abatement add-on of about $500 million.

Senator FOWLER. What is it now?

Mr. MCCAULEY. For lead abatement?

Senator FOWLER. Yes.

Mr. MCCAULEY. Right now there is no special appropriation for that. It's being paid out of modernization funds. Yet, some recent HUD studies have indicated that there is a considerable problem in housing, including public housing, and we are going to be asked to get it out of there. We think it would be shortsighted to look to the modernization program to do this and thereby reducing again the level and the speed with which we can bring the current properties up to a decent standard of habitability.

So we are asking $500 million for this. There will be continuing studies to put a real price tag on it, and we recognize that this may be low in the context of what the eventual need will be found to be.

We are asking for $700 million in development or major reconstruction funds for increasing the number of units. I need hardly say how desperate most communities are for housing for homeless people and with long waiting lists. In our authority alone we have a waiting list of over 36,000 families waiting for housing. It is a critical need and it is not being met. Modernization is good, but it isn't adding new housing to our stock.

I notice the red light is on.

Senator **Fowler**. Thank you very, very much, Mr. McCauley.

Mr. **McCauley**. Thank you.

[The statement follows:]

STATEMENT OF JOHN McCAULEY

I am John McCauley, the Deputy Executive Director of the Baltimore Housing Authority.

Thank you for inviting the Council of Large Public Housing Authorities (CLPHA) to give you, Madame Chairwoman and Members of the Subcommittee, our views on the funding requirements for public housing for fiscal year 1990. CLPHA consists of fifty of the largest PHAs which manage about one-third of the nation's units.

Our authority in Baltimore is responsible for over 18,200 apartments in the conventional program and for over 5,000 Section 8 certificates and vouchers.

CLPHA's calculations are that we suffered underfunding in FY '88 of $90.1 million and in FY '89 of $125.6 million, so this makeup is essential.

In the Baltimore Housing Authority, we estimate we have lost over $1 million because of recent operating subsidy shortfalls.

The CLPHA requests for fiscal year 1990 are as follows:

Operating subsidies:	$1.867 billion
CIAP (modernization):	$2.500 billion
- lead abatement add-on:	$500 million
Development and Major Reconstruction	$700 million

Operating subsidies

As you may know, almost one-half of the revenue for operating public housing comes from the operating subsidy and almost half of our operating revenue is paid for utilities. Thus, any shortfall in appropriations falls entirely on that 40 to 50% of our budgets which are used for non-utility expenses -- maintenance, security, rent collections, re-renting units and the like -- because we have to pay the utilities.

These operating subsidies are vital, particularly if we are to have any hope of stepping up security and tenant services in our efforts against the plague of crack and other drug problems that are exploding on us. We are pleased that HUD under Mr. Kemp wants to expend special effort on these matters, but if we are not even to get full funding of the Performance Funding System level of operating subsidy, to say nothing of unfulfilled promises under last year's drug legislation, then the current focus on drugs in public housing will be a cruel hoax.

In Baltimore, we have made a major effort to step up our security guards, but it's very expensive. It now costs $7 million a year, which comes out of CIAP, CDBG funds and operating reserves. It's virtually going to bankrupt us unless we get additional support for these efforts, but they are necessary in order for us to maintain the livability of our family public housing stock. We ask your support for increased funding for these and other security activities in public housing.

A list of some of the most important things that CLPHA believes can be done about the problems of drugs in public housing is attached to this testimony. Most of these efforts cost money. The most important focus is that all PHAs, working with their own residents, need to reassert management control over their developments.

To give you some sense of the seriousness of the problem of mounting costs and declining subsidy, our housing authority may have had to deplete our reserves by $13 million in this year, and can foresee grave problems in the near future if the pattern continues. Many authorities have no reserves.

CIAP (modernization.)

Congress, spurred by this Subcommittee, has brought better living to public housing tenants through increases in modernization funding over recent years. While we wish it had not been paralleled by lower funding for development, we recognized the force of the Administration's opposition and are pleased that those funds were so usefully redeployed. However, at the current $1.7 billion level, we are not on a funding course that will bring all public houisng to a decent state in the foreseeable future. At your prodding, HUD a year ago released the first part of the Congressionally-mandated national assessment of public housing needs, which established that $21 billion was needed to meet backlogged repairs. Assuming that the condition of our developments stood still, which it doesn't, that would mean it would be twelve years before today's problems would be relieved.

We now know the annual level of mod funding that is needed both to eliminate the backlog and to meet the needs that will accrue in the meantime from normal deterioriation. **HUD and its consultant, ICF, Inc., have just completed the next part of the needs assessment study and have concluded, among other things, that CIAP should be at $3.7 billion per year in order to bring all public housing to a decent, modest, code-complied standard by the year 2000. Certainly that is not an overly ambitious goal for a nation that speaks of manned stations in space and probes to Mars.** Nor is the cost high when compared to normal depreciation rates for real estate. The replacement cost for our national 1.4 million units of public housing is at least $90 billion. A conservative 30-year depreciation rate (less than that allowed in the Internal Revenue Code for residential rental property) would itself suggest the need for $3 billion annually for accruing needs alone, so the HUD study results seem well in line.

By the way, the recent HUD study installment suggests the wisdom and economy of adequate current levels of operating subsidies and CIAP. The new results show that almost one-third of the $21 billion backlog arose from maintenance items that proper past funding could have prevented. "Pay me now or pay me later" works with a vengeance in property care.

In addition to rehabilitating our properties for the comfort and security of our tenants, the Congress has laid on us in the Housing and Community Development Act of 1987 and later amendments the important but costly requirement to eliminate the hazards of lead poisoning from the paint and grounds of our developments. No accurate estimate exists of the cost of this work. We have proposed an initial add-on to CIAP of $500 million for fiscal 90 until better costs are established.

On top of all this, Secretary Kemp wants to tap CIAP funds for anti-drug efforts of undefined proportions. We are not of a mind to resist this invasion since we know little of it yet. We do know that the underlying objectives of CIAP will be undermined if its funding is splayed in many directions.

Development.

It is now recognized on all sides that tenant-based assistance, as helpful as it can be, is not successful in providing affordable housing in many low-vacancy communities and for many minority families. Public housing production must be stepped up. Our waiting lists grow -- they now number 34,000 in Baltimore -- our families double up (perhaps as many as 20% of our units) -- and costly unsuitable shelters multiply across the nation.

This country dropped from fifty thousand units a year of public housing to five thousand at the very time when needs were increasing with the declining affordable rental housing market and we have the homeless to attest to the mistake of it. Heaven knows where things would be if earlier Congresses had not built the inventory which houses nearly 3.5 million of our poorest families and elderly. The fact that we now face the possible loss of hundreds of thousands of privately-owned subsidized units (to say nothing of the expiring certificates and vouchers) reinforces the need to augment our publicly owned housing. Now is the time. The pipeline, which takes time to develop, has been drained all but dry in the past eight years. (By the way, no high rise family projects have been built outside New York for at least twenty years. Current developments have been fifty units at most.)

HUD must be spurred to cooperate with the development program. Its cost guidelines are unrealistically low and serve to make development impossible in many areas of the country where CLPHA has members. Typical of the

Department's attitude is its recent Notice PIH 89-13 which extends the development cost guidelines from the last 12 months into the next 12 months unchanged! Yet the Consumer Price Index advanced 5% and is expected to advance another 6% in the coming period.

Development funds are also needed for major reconstruction of obsolete projects and for replacement units for units lost in this way or through other demolitions. PHAs have begun in several cities worthy efforts to reconstruct and/or remove the 'dinosaur' projects of the fixties and sixties, which were ill-begotten. To do so, both by need and by local desire we must have replacement units. The present appropriation barely goes beyond this need.

Conclusion.

The members of CLPHA realize the strictures of the national budget. They also realize that those strictures have not been placed equitably on all national efforts, even among those funded in the Subcommittee. We watch as 'non-existent' funds are suddenly found for the "savings and loan" crisis. We just wish we had the words and wit to make the crisis of poor people's housing needs evoke as clear and quick a response.

Thank you for this opportunity and for your support of public housing during the recent difficult years.

Attached: Draft CLPHA policy on drugs in public housing and what can be done.

What needs to be done?

The principal means of addressing the problems of drugs in public housing in America today is not solely: (a) to roar into public housing developments with guns blazing, break down doors, and "round up the usual suspects"; (b) to get football teams going at all public housing developments; or (c) to forcibly deport the youths to "boot camps" (Drug Czar Bennett's latest idea). Each of these methods may deserve some consideration under certain circumstances.

What is most needed is the reassertion of competent, effective management in public housing developments -- accompanied by a high degree of tenant involvement and participation in the management of the developments, and increased PHA staff professionalism and involvement. This kind of effort needs to be backed up and supported at the national level by a reinvigorated and responsible HUD, willing to play its own role competently and effectively.

In some cases where HUD and an Authority prove incapable of doing this job together, it may be necessary to consider turning the development over to complete tenant management: i.e. a total take-over of the developments by the residents themselves.

Improved management efforts should generally be kept low-key in terms of publicity, to avoid reinforcing the

public's frequent perception that drugs are more of a problem in public housing than they are in similar neighborhoods which surround public housing.

The goal should be to restore a strong management presence, and to work with public housing residents to build confidence that past patterns of neglect can be -- and are being -- overcome.

The list below includes some activities which Housing Authorities have engaged in with notable success in the past and which should be expanded and continued to reduce the problems of drugs in their developments.

No list, however, can be a substitute for action. In order to achieve results, every PHA must develop and carry out a strategy, uniquely tailored to its own local needs and situation.

A. Improved Management and Security.

1. Increase management presence at the site. This can take a wide range of forms, virtually all of which will require money. In some cases, the principal focus will need to be on managerial changes at the Housing Authority, reallocating resources to where they are most needed and trimming less-needed staff and operations. In others cases, an upward adjustment of federal operating subsidies will be needed to cover the costs of the stepped-up and expanded managerial functions PHAs are being called upon to perform.

2. Reestablish management control over all units in a development. A "swat team" may not be the only enforcement tool that is needed, but a strong enforcement component is needed. There is no alternative to using the necessary enforcement techniques to drive drug-related individuals out of the developments and re-take the apartments. "You can't reason with these people." The police presence, the enforcement component, is a necessary component of a broader program.

3. Take possession in a legal manner of apartments that are being used illegally. Forfeiture. Expeditious evictions. Re-take possession of apartments and facilities that are being illegally used.

4. Stepped up evictions process. Make it more effective. Document the continuing problems: legal, bureaucratic, statutory, judicial. PHAs should make an effort to go to the judges and the courts, educate them and ask them for their help in getting drug-related people and activities out of public housing and off the sites with fewer delays.

5. In the worst cases more radical solutions may be required. In the cases of the worst developments, where crime and drugs are rampant, radical, concentrated, intensive efforts may be required. One example of this approach is the OASIS technique which involves a massive array of concentrated, coordinated, purposeful actions.

The first step in this approach is to find out exactly what is going on at the site in detail, and who is involved.

6. Competent and effective management and staff presence. Need a high degree of professionalism on the part of the PHA staff.

7. Keep units occupied. Identify vacancies as soon as they occur and get them re-occupied quickly.

8. Limit occupancy to persons on the lease. Make a major effort to ensure that units are occupied only by those persons shown on the lease.

9. Meet with city government and insist that municipal police departments provide improved security for public housing developments, including going after drug trafficking activities at the sites. (In some cases, it would undoubtedly help if public housing developments could do more to "pay their own way" in terms of security, e.g. by increased PILOTs -- for which increased federal operating subsidies would be needed accordingly).

10. Explore the possibility of locating municipal (or Housing Authority) police sub-stations at developments that have the most serious crime and drug problems.

11. Make sure that routine maintenance and modernization activities are carried out. For example, it is important for the Authority to keep on top of the litter, garbage, etc. "You can't ask residents to do something you're not doing yourself." (Seattle)

B. Tenant participation and involvement in managing the development.

Explore and enter into agreements with tenant groups for their involvement and participation in some or all of the following activities.

1. Monitoring the sites on a 24-hour basis, including weekends.
2. Identifying maintenance and modernization needs and helping to establish priorities for action.
3. Operating security booths at entry points (sometimes risky; may need guards instead).
4. Screening and evaluating prospective new tenants.
5. Identifying tenants who are trouble-makers, or who may be involved in drug trafficking.
6. Identifying the locations on the sites that are used for drug activities (and the times), as well as non-tenants who are participating in drug activities on the site (e.g. former tenants).
7. Reviewing and advising the Authority in the cases of tenants being considered for eviction.

8. Identifying units which become vacant as soon as they are vacated, so the Authority can claim control of these units and get them repaired and re-occupied as quickly as possible.

9. Organizing and managing educational and recreational opportunities for youth at the site.

10. Helping to counsel resident families that have drug problems.

11. Staffing hotlines for anonymously reporting illegal activities.

12. Organizing Block Watch programs in public housing.

C. "People Issues."

1. Alternative options for Youth.

(a) Do more to provide jobs for young people in public housing. We need and comprehensive and extensive effort to do something about employment in public housing, to get the families back into the mainstream of life. PHAs can and should do more in the way of hiring PHA residents. PHAs should also ask Congress to provide funding for job training and for realistic jobs for the young people in public housing.

(b) The youth living in public housing need to have the same kinds of "road to opportunities" that all other youth need, a pathway to success and self-esteem. Society needs to take an active role in helping them to find such a path. For society to neglect that function is to give up on one of the most important roles it can play in shaping the lives of its young people. It is throwing away young lives.

(c) Educational opportunities.

(d) Alternatives for youth. Get the young people, who are so much a presence in the developments, into the mainstream of American life, so there is hope and opportunity for them.

(e) Recreational opportunities.

2. Drug prevention, drug education and drug counseling. Much more has to be done on prevention and education, to combat the seduction to the drug life that goes on, because it's easy money and so simple. What and how?

Drugs aren't only a problem for tenants, but are frequently staff problems (of the PHA), too. They must be dealt with, because there is frequently an interaction between staff and tenants on this. Need to limit the hiring of these people. Drug abuse programs. Identify the problems you have with your own staff. Counseling. Etc.

3. Family Pre-Eviction Counseling. Need to talk to families prior to evictions, and counsel with them.

4. "Gateway" issues: day care, remedial services to people, schools, jobs and job training, education, day care, health and other services. Helping to reduce economic dependency.

D. Partial or total redevelopment of some sites, where appropriate. Other physical changes at sites.

1. Increased "hardening" of sites, e.g. greater security of access to buildings (much easier for elderly than for family buildings).

2. Redesign of buildings, e.g. to reduce common hallway space and provide as much separate entryway as possible. Reduction of density at the most seriously overconcentrated sites. Reducing family units in high-rise buildings, where these are unworkable for the Authority. (In some cities, however, e.g. New York, family hi-rises do work.)

3. Redesign of sites, especially redesign of grounds to beter control access to public housing, as well as to provide more "defensible space" (as per Oscar Newman). For example, add barrier systems that prevent cars from being driven through the sites, and add recreational facilities for youth.

4. Total redevelopment of some seriously distressed developments, including major changes in the resident population.

E. City government. City government needs to play a major role. Anti-drug efforts in public housing need to be a part of city-wide effort, particularly a city law enforcement plan.

Drug problems do not stop at the boundaries of a public housing development. Drug activities that occur on the sidewalks or on public streets that run in or through public housing developments, as well as across the streets from and in neighborhoods surrounding public housing developments, must be dealt with by the municipal police. This should be done in coordination with and cooperation with public housing security and anti-drug efforts. There are no geographical boundaries to this problem.

The responsibility cannot be placed upon the PHA alone. PHAs are not taxing units of local governments and cannot raise the funds needed to address these serious problems. There is no substitute for strong local law enforcement activities on a continuing basis.

F. Social service agency coordination.

The Authority should aim for the organization of all social service agencies active in the community into a coalition that has as its goal the provision of programs for public housing residents.

For example, Seattle has an Interagency Committee that represents all agencies active in its communities, and they meet monthly to report on what they are doing in terms of anti-drug programming in their communities. This keeps everyone informed and reduces duplication.

This committee could also come in very handy when it is time to lobby for Block Grant and United Way funds for programs in public housing.

STATEMENT OF CATHARINE KILMURRY, MEMBER, NATIONAL LEGISLATIVE COUNCIL, AMERICAN ASSOCIATION OF RETIRED PERSONS

Senator FOWLER. Good morning.

Ms. KILMURRY. Good morning, Senator Fowler.

I am Catharine Kilmurry, and I'm a member of the National Legislative Council of the American Association of Retired Persons. You have our written report, but I would like to emphasize four of the objectives that we have listed among others.

First, we feel that the section 202 program should be funded at least at the level authorized by the Housing and Community Development Act of 1987. We support the establishment of separate elderly and handicapped programs under section 202, but we feel that the program should be funded at a minimum level of at least 9,500 units for elderly and 2,500 units for handicapped housing.

We also urge, as several other people have mentioned here, that the 4-year pipeline of projects which have been funded in previous years, but which are being held up for one reason or another, that HUD should be directed to clear this up.

We do support changes to the section 202 program which are being discussed currently in another committee of the Senate, and we do urge this subcommittee to await until these reforms have been thoroughly explored and enacted before they cut the the budget authority available to the section 202 programs for this year.

The second one that is very dear to our hearts is the Congregate Housing Services Program. We feel that this is one of the most worthwhile programs that we have, and in connection with our study of this, and we have visited several of these, and we have prepared a videotape showing some of the activities there which I would like to give to the committee for their information.

Senator FOWLER. Good.

[The videotape is passed to Senator Fowler by Ms. Kilmurray.]

Ms. KILMURRAY. These sites allow disabled people of all ages to live independently at a much lower cost than institution-based services, and the $10 million that we are asking to have appropriated for this is really a very small minuscule amount compared with the Federal budget.

Another thing that we feel is very necessary is increased funding for operating subsidies for modernization and public housing. The public housing stock is deteriorating. It now houses over 600,000 older households of people who have been living in these houses for a good many years and who are growing older as time goes on, and it certainly is more economical to repair these houses than to let them completely go to pieces and then have to build new ones.

The fourth thing that we would recommend would be that some sort of incentive should be set up for the owners of those housing projects which are now eligible for prepayment and which are sheltering low-income houses. You know, a great many of these things have been in existence for 20 years and these landlords are now able to buy down and start charging market rents, and we would hope that this would be funded.

In conclusion, we feel that meeting the Nation's future housing needs requires leadership that looks beyond just the bricks and mortar in buildings but also to the human side of the housing, especially as we serve the special populations, including the handicapped, who currently predominate in federally assisted housing.

The proposals we have made to day are only a small step in the redirection of our national housing policy.

Thank you for the opportunity to testify. I do have with me Mr. Redfoot, who is a member of our staff, who has been studying these things, and if you have any questions, I'm sure he will be glad to answer them for you.

Senator **Fowler**. Thank you. I'll call Mr. Redfoot. [Laughter.]

Thank you, Ms. Kilmurray, very much, and to all the panelists, I thank you for your precision and help as we study these matters.

[The statement follows:]

STATEMENT OF CATHARINE KILMURRAY

Madame Chairperson and members of the Subcommittee:

I am Catharine Kilmurray, member of the National Legislative Council of the American Association of Retired Persons. Let me begin by congratulating you on assuming the chairmanship of this subcommittee. Your long-standing commitment to meeting the needs of low-income will bring much needed leadership to federal housing policy.

AARP appreciates this opportunity to testify on appropriations for programs under this Subcommittee's jurisdiction. Our recommendations for specific programs can be summarized as follows:

1. Reject the Administration's proposed restructuring of the Section 202 program and provide sufficient loan authority and Section 8 rent subsidies to support 12,000 new units as authorized under the program. In addition, we urge the Subcommittee to include report language directing the Department of Housing and Urban Development to clear out the four-year pipeline of projects already funded under the Section 202 program;

2. Provide the authorized $10 million for the Congregate Housing Services Program (CHSP), which would maintain services at the 60 current project sites through FY 1990 and add the first new sites since 1983;

3. Provide sufficient operating subsidies for public housing authorities to maintain adequate services for all tenants;

4. Provide additional funding for the public housing modernization program, with a portion of any new funds to be used for facility modifications needed to assist older and disabled tenants;

5. Preserve pre-payment eligible, low-income housing by funding Section 8 project-based subsidies and other incentives to owners; and

6. Provide additional funding for the housing counseling program to meet additional responsibilities for counseling home equity conversion consumers.

7. Adopt report language with regard to the Environmental Protection Agency (EPA), calling for greater use of Senior Environmental Employment (SEE) enrollees in EPA activities.

Daily news stories have featured the deterioration of the physical structures and social fabric of our public housing projects. Recent reports have surfaced regarding favoritism in the allocation of Section 8 moderate rehabilitation funds, potential fraud in the 223(F) co-insurance program, and influence peddling by former officials. A major task facing the new leadership in both the Administration and Congress must be to restore confidence in housing programs. After years of neglect, our nation must move ahead to the urgent task of meeting our national commitment to "a decent home and a suitable living environment for every American family."

While progress has been made in improving the housing conditions of older persons, serious problems remain for older home-owners and renters. Harvard University's 1988 study of "The State of the Nation's Housing", notes that older renters continue to pay a higher percentage of their incomes for rent than any other age group (36 percent). Other data indicate that the median rent of an older woman living alone consumes roughly one half her income. Some 2.3 million older households spend over 35 percent of their incomes on housing. In addition, the National Housing Task Force found that nearly one-half of all low-income homeowners are older people, many of whom continue to occupy substandard housing.

The Administration's funding proposals for housing assistance in FY 1990, which are very inadequate to address current housing needs, are even more inadequate when addressing likely future needs. The Harvard study projects that an additional 5.5 million new older households will be formed by the year 2000. During this same time period, the University of Michigan has projected a shortfall in the private market of some 2.8 million specialized housing units for older persons. Those most likely to be left out by the market are those with the most acute housing needs -- older women over 75, low-income households, and the frail.

New approaches to housing assistance must be combined with a renewed federal commitment to decent, affordable housing for all Americans. AARP believes the FY 1990 HUD Appropriation Bill should halt the steady erosion of our federal housing programs and initiate prudent investments to help meet our nation's current and future housing needs. I would like to highlight AARP's recommendations for the Subcommittee's consideration.

1.) Reject the Administration's proposed restructuring of the Section 202 program and provide funding at levels sufficient to produce 12,000 new units under the program. The Administration has proposed restructuring the Section 202 program by replacing direct federal loans with a "credit voucher" that would be used to buy-down interest rates on the private market. AARP has actively sought substantial reforms to the program to eliminate its redundant financing through Section 202 loans that are paid back by Section 8 rental assistance. We have serious misgivings, however, about the reforms proposed by the Administration.

As proposed, the Administration's reforms have no protection for residents in the event of default or prepayment. In addition, "credit vouchers" are an untested mechanism for interest rates. We strongly urge this Subcommittee to await the enactment of reforms being discussed in both Houses of Congress before cutting the budget authority available to the Section 202 program.

As previously discussed, there is a growing need for the specially designed units for older and handicapped persons produced under Section 202. These units, equipped with such features as non-slip floors, accessible doorways, and lowered countertops, are simply unavailable or unaffordable to low-income persons in the private market. Production levels under this highly successful program have already dropped well below the 20,000 unit annual target set by the 1981 White House Conference on Aging. The Administration's proposal for 4,000 units of elderly housing and 3,000 units of handicapped housing under Section 202 is obviously inadequate.

AARP supports the establishment of separate elderly and handicapped programs under Section 202 as provided by HCDA of 1987. While AARP recognizes that the Subcommittee faces tight spending limits for FY 1990, we ask that you fund the Section 202 program at a level sufficient to support 9,500 units of elderly housing and 2,500 units of handicapped housing, consistent with authorized levels under the Housing and Community Development Act (HCDA) of 1987. Last year, Section 202 sustained some of the most serious cuts of all housing programs. At a minimum, the FY 1988 levels of spending, adjusted for inflations, should be restored to Section 202.

The Association also urges this Subcommittee to include report language that would direct HUD to address the four-year pipeline of projects funded in previous years. In many instances, projects have been delayed by unrealistically low fair market rents (FMR's). Under such circumstances, the Subcommittee should direct HUD to adjust FMR's up to current limits in order to bring these much needed projects into production.

2.) Appropriate the $10 million authorized for the Congregate Housing Services Program (CHSP). The CHSP has proven very effective in preventing unnecessary institutionalization among older and disabled residents of public and Section 202 housing. A 1986 HUD-commissioned evaluation by the Hebrew Rehabilitation Center of Boston notes that the expected institutionalization rate for older residents was cut nearly in half at sites having CHSP services. Equally impressive were the de-institutionalizing effects of CHSP services. At sites for older tenants, administrators were six times more likely to admit residents from nursing homes when they had CHSP services to offer.

Despite these successes, the Administration has proposed termination of the CHSP, a short-sighted approach that ignores the challenge faced by housing managers in providing for the needs of older tenants who are "aging in place." Currently, more than 40 percent of all federally assisted housing units are occupied by older households. Costly institutional care is too frequently the only alternative to their current residences for older residents experiencing illness or disability.

The needs of these individuals were recognized in the Housing an Community Development Act (HCDA) of 1987, which made the CHSP a permanent program authorized at $10 million for FY 1989. AARP has been working with the House and Senate authorizing committees on a new approach to expanding these services further in a comprehensive supportive housing package.

3.) Provide sufficient operating subsidies for public housing. The social problems experienced by the public housing program have been much publicized in recent weeks. These problems are of particular concern to older residents who occupy roughly 600,000 units -- some 40 percent of all households living in public housing. Underfunding of operating subsidies jeopardizes the ability of public housing authorities to maintain housing units and provide services like security, which are especially important to older residents. AARP is pleased that the Administration budget proposals would slightly increase operating subsidies, though their proposals are still too low to adequately address the management problems encountered by public housing facilities in our major cities. Operating subsidies should approximate actual performance funding system (PFS) requirements and should not be tied to uncertain future savings.

4.) Increase funding for public housing modernization. AARP opposes the Administration's proposal to reduce modernization funds from $1.65 billion to $1 billion. The current stock of public housing is a valuable public resource and strong efforts should be made to arrest deterioration and provide a safer environment for tenants. The congressionally mandated ABT Associates study released last year, indicates that about $21.5 billion would be required to restore this housing to a safe condition. While this is a very substantial sum, the replacement cost of public housing is estimated at $70 billion.

An important consideration in any long-term modernization program should be modifications that assist older residents who are aging in place. Currently, half the older residents of public housing live in "family" developments where such features as grab bars, extra wide doorways and lowered countertops are not available. If the Subcommittee decides to increase the modernization program above current levels, AARP hopes that a portion of the funds will be devoted to such improvements. We would recommend that language to that effect be included in the Manager's report accompanying the appropriations bill.

5.) Provide incentives for owners of prepayment-eligible projects to maintain the housing for low-income renters. In particular, increase the availability of Section 8 project-based subsidies for prepayment-eligible projects. AARP is very concerned about the potential impact of mortgage prepayments on older tenants. We estimate that prepayment-eligible projects represent 7 - 10 percent of all federally assisted housing subsidies is critical to preventing prepayments from occurring. A report of the National Housing Preservation Task Force indicates that project-based subsidies in combination with other incentives could keep total prepayments below 50,000 units. Further, the report recommends against the use of housing vouchers as a replacement for existing rent subsidies in any project whose mortgage has not been prepaid. A shift to five-year vouchers would create especially difficult financial problems for projects that are heavily dependent on project-based subsidies, because of the uncertainties involved with a shorter commitment and tenant-based subsidies.

6.) Provide additional funding for housing counseling. The 1987 Housing Act authorized a reverse mortgage insurance demonstration for older homeowners who want to convert the equity in their homes into cash that can be used to meet basic needs of health care, home maintenance, and income. The Act requires that all older consumers receive counseling about home equity conversion and other options to address their needs. To expand home equity opportunities will require additional funds for the counseling program.

7.) Senior Environmental Employment (SEE) Program. The Association urges that the Subcommittee include report language calling upon the EPA to make greater expand use of Senior Environmental Employment (SEE) enrollees in agency activities, such as asbestos inspection and monitoring the quality of water. Additionally, EPA-funded state programs be encouraged to use SEE participants to provide technical assistance in emerging environmental concerns, including inspecting underground tanks for leaks and monitoring the quality of indoor air.

CONCLUSION

Meeting the nation's future housing needs will require far-sighted leadership that looks beyond the narrow "bricks and mortar" issues of construction and finance to recognize the "human side" of the special populations who currently predominate in federally assisted housing. The proposals we have made today are only a small step in the redirection of our national housing policy, so desperately needed if we are to address tomorrow's housing problems.

Thank you again for the opportunity to testify before you today.

PANEL 2

Senator FOWLER. Ladies and gentlemen, we have, as I mentioned earlier, seven panels. We are going to continue swiftly, but I feel like I ought to say to panels 5, 6, and 7, you are certainly welcome to sit here and listen to everybody, but you can also go get a cup of coffee and an early lunch or something and sort of figure out your time to be back.

Panel 2, the Shoshone Tribe, the National American Indian Housing Council, Laguna Housing Authority, the Wind River Housing Authority, and the Mescalero Apache Tribe.

Welcome everybody.

Let's begin with, and I probably ought to keep them in order here, Mr. Wes Martel of the Shoshones.

Mr. GOVER. Mr. Chairman, my name is Kevin Gover, and I'm the attorney for the Shoshone Tribe.

Senator FOWLER. All right, Kevin Dover.

Mr. GOVER. Gover with a "G".

STATEMENT OF KEVIN GOVER, ATTORNEY FOR THE SHOSHONE TRIBE

Mr. GOVER. Mr. Martel has asked me to appear on his behalf today to press our request for an authorization from this committee for the construction of 3,000 new units of Indian housing in fiscal year 1990.

The Shoshone Tribe resides on the Wind River Reservation in central Wyoming. They have approximately 6,000 tribal members living on that reservation and are responsible for providing housing for those folks.

We currently have 300 families on our mutual home ownership waiting list and another 200 on the low-rent waiting list. We have 20 units in the pipeline for each program, and we will see another 40 units constructed during this year, which barely begins to make a dent in either of our waiting lists.

Over the past 8 years, Indian housing has suffered dramatic cuts from a high of approximately 6,000 units in fiscal year 1980 to 1,000 units in fiscal year 1988. I believe that over this time, Indian Housing Authorities have not been coming to Congress and pressing their concerns for a couple of reasons.

One, I think we all feel that we need to share in budget cuts that have become necessary over the past 8 years. Unfortunately, we believe the budget cuts have been disproportionately borne by Indian country. Now that we are down to 1,000 units in a situation where recent surveys are indicating 90,000 Indian families live in substandard housing, 1,000 units doesn't even meet new demand.

That's why we have come here this year in a way that I believe is unprecedented to demonstrate our concern.

With that, Mr. Chairman, I'll just reemphasize that 6,000 units a year would keep up with need. We are asking for only 3,000 in the recognition that you have many other worthy programs that require funding.

Thank you.

Senator FOWLER. Thank you, Mr. Gover, very, very much.

[The statement follows:]

STATEMENT OF WESLEY MARTEL, COCHAIRMAN OF THE SHOESHONE TRIBE OF THE WIND RIVER RESERVATION

Thank you, Madam Chairman. My name is Wesley Martel, and I am the Cochairman of the Shoshone Indian Tribe of the Wind River Reservation, Wyoming. I am appearing here today on behalf of the Shoshone Tribe to address matters of great importance to the Tribe in both the housing and environmental areas. As I will discuss in more detail below, the Shoshone Tribe is concerned specifically about the number of housing units for which appropriations are to be made in the coming fiscal year.

The Wind River Housing Authority administers Indian Housing Programs for the benefit of members of the Shoshone and Arapaho Tribes. I appear to urge the Appropriations Committee to restore funding in fiscal year 1990 for new housing construction under the Indian Housing Program.

Since 1980, Indian Housing Program appropriations have declined dramatically from funding for 6,000 units to funding for 1,000 units in fiscal year 1989. We are aware that the budget for fiscal year 1990 submitted to Congress by the Administration proposes no funding for new construction of Indian housing. Zero units is an unacceptable proposal. In fact, last year's appropriations for 1,000 new units minimally addresses the severe housing problems present on Indian reservations, particularly the severe housing problems present on Indian reservations, particularly since approximately 250 federally-recognized tribes compete for these units. The appropriation represented a 50 percent cut of the 2,000 units available in fiscal year 1988 and provided mere "bandaid" treatment to the housing shortage in Indian country.

A 1986 Bureau of Indian Affairs survey of housing needs in Indian country indicated that over 90,000 Indian families are without adequate housing. Based on the number of young people entering the housing market each year, the Tribes believe that the numbers far exceed that figure, and will continue to rise unless increased funding is appropriated now. We are gratified to learn that Secretary Kemp has recognized the need for more federal support for public housing.

The Wind River Reservation currently has approximately 200 families on the Low-Rent waiting list and 300 families on the Mutual Self Help waiting list. The Tribes have only 20 Indian housing units in the pipeline for each of these programs, and are in the process of putting the units out for bid. Construction of these units, however, will barely make a dent in the waiting list.

To provide meaningful assistance in addressing critical Indian housing problems the Shoshone Tribe respectfully urges that the Committee appropriate funding for the construction of 3,000 new units for Indian housing programs in fiscal year 1990. In House Report No. 100-701 ("House Report"), which accompanied last year's appropriations bill for the Department of Housing and Urban Development, the Appropriations Committee recommended a total of $71,850,788 for 1,000 Indian housing units. Based on these figures, a funding level of $215,552,364 for 3,000 units is necessary.

The Shoshone Tribe suggests that some Indian housing program funding may be obtained by shifting funds from the appropriations for section 8 vouchers. A total of $1,463,825,280 for 52,500 housing vouchers was appropriated in fiscal year 1989. As noted on page 3 of the House Report, "relying on one subsidized housing program, such as section 8 vouchers, cannot meet all demands of such a geographically diverse population." More specifically, I would point out that the voucher program is likely to be useful only for the few large tribes having substantial numbers of members residing in urban areas.

In conclusion, the Tribe regards seriously the need to provide adequate housing for its Tribal members. Such housing cannot be provided without the requested increase in federal funding.

On behalf of the Shoshone Tribe, Madam Chairman, I wish to express our appreciation for this opportunity to appear before the Subcommittee. At this time I would be happy to respond to any questions which you or other members of the Subcommittee may have regarding my testimony.

STATEMENT OF GEORGE NOLAN, CHAIRMAN, NATIONAL AMERICAN INDIAN HOUSING COUNCIL

Senator **FOWLER**. Mr. George Nolan of the National American Indian Housing Council.

Mr. **NOLAN**. Mr. Chairman and members of the committee that aren't here right now, but nevertheless on behalf of the National

American Indian Housing Council we want to thank you for allowing us to comment today.

I'm the chairman of this group, and I'm also the vice chairman of my Tribe back home.

Senator FOWLER. Which is your Tribe?

Mr. NOLAN. Sault Ste. Marie Tribe of Chippewa Indians, and I am going to try to be briefer than I had planned for last night. I know you are pressed for time.

I would just like to mention that the BIA paints a vivid picture to the extent of our housing needs. In 1987, one-half of 186,000 households lived in substandard housing. One household in five needs rehabilitation, and perhaps the worst of all is that one household in four does not have any housing. They live with families in tents and cars.

Senator FOWLER. Wherever they can.

Mr. NOLAN. Wherever they can, and that's 25 percent, and I think that's terrible.

The BIA found in 1987 a need, like the gentleman previously said, of around 93,000 new or substantially rehabilitated units, and in 1970 that number was 63. So you can see we are losing ground all the time.

In fiscal year 1990, the presidential budget is zero for new housing units and development and, additionally, the administration proposes zero for water and sanitation facilities for existing homes in Indian country. In order to develop any new units, we have to have this in the appropriation also.

We have many reasons that these problems exist. Poverty, lack of job opportunities, weak economies, remote rural locations, the trust status of our land, and cultural differences complicate easy provisions for housing assistance. Without Federal help, Tribes have no means of financing homes.

What we would be asking the committee here today is that it would prohibit further limitations to put Indian housing in the cuts to meet Gramm-Rudman targets and other reduction measures. Last year we received 1,243 units.

Our need is far greater, and I'm going to use the number of 6,000 units as the need and ask for that because I have a mandate to do that for my constituency. But I do realize that is improbable, and I hope they don't hear me like saying this on the record. I'm still asking for 6,000 units, and even at this level it will be 50 years before we catch up to our need.

So we truly need your help.

As an aside in my testimony that I provided I also give a profile of my Tribe, and I have read some others here, too, that profile some of the situations.

What I would offer to you and any of the committee members is the opportunity to come and visit us, and it doesn't necessarily have to be my Tribe as chairman. I could facilitate a visit any place in the country in the Indian community. So at your earliest opportunity I would recommend that you come out and see the plight of our houses in different areas of our housing.

Thank you, sir.

Senator FOWLER. I appreciate that, Mr. Nolan. I have been to several tribes in several States over the years and will urge my colleagues to make such visits. I happen to agree with you, but I'm only one Member, of course.

Based on the record thus far, especially in the last 8 years, the housing in Indian lands ought not to be under the Gramm-Rudman.

Mr. **Nolan**. I am very pleased to hear you say that.

Thank you so much.

Senator **Fowler**. Thank you.

[The statement follows:]

STATEMENT OF GEORGE NOLAN

Madame Chairman and Members of the Committee, thank you for the opportunity, on behalf of the National American Indian Housing Council (NAIHC), to comment on the FY 1990 Indian Housing budget proposed by the Department of Housing and Urban Development. My name is George Nolan and I am Chairman of the National American Indian Housing Council. I am also Vice-Chairman of the Sault Ste. Marie Tribe of Chippewa Indians. NAIHC is a non-profit organization comprised of 178 Indian and Alaska Native Housing Authorities who are working toward making decent housing possible for all Indian and Alaska Native people.

The Housing Act of 1937, one of many post-depression New Deal programs, promised to provide safe and sanitary dwellings for America's poor, alleviate unemployment and stimulate business activity. However, it was not until twenty-four years later, (1961) that the Public Housing Administration determined that tribal governments, as local governing bodies, could establish Indian housing authorities (IHAs) and apply for housing assistance funds. More than 60,000 homes have been built since 1961 with assistance from the now Department of Housing and Urban Development, and Indian communities have made great progress in improving living conditions with aid from the Federal government. However, major problems still exist and there are more problems facing us in the future.

According to 1980 U.S. Census figures almost one fourth of all American Indians live in housing that either lacks basic plumbing facilities, defined as not having hot and cold piped water, a flush toilet, and a bathtub or shower inside the unit for the exclusive use of its occupants, or the unit is overcrowded. In addition to poor housing and inadequate plumbing, a safe water supply is a major problem in Indian Country. While the incidence of unsafe water for the nation as a whole is about 3%, the figure averages 20-25% for Indian communities.

Also, according to Census figures, demographic trends for Indian people will be challenged in the 1990's by 1) an increase in elderly who need new standard homes or housing rehabilitation; 2) sharp upturns in single persons and single parent heads of households; 3) 44% more younger families under the age of 20

compared with 32% for the national total population, and finally more Indian families with lower or poverty level incomes moving to urban areas where services will also be very limited.

Another vivid picture of the extent of Indian housing needs, is provided by the annual surveys of housing taken by the Bureau of Indian Affairs. In 1987, just under half of the 186,000 households in Indian areas lived in standard housing. Almost one household in ten lived in housing that was so bad it needs to be replaced. One household in five (21.5%) lived in units needing rehabilitation. Perhaps worst of all, one household in four (28.6%) had no housing of its own, and either lived doubled up with relatives or friends, or in cars, tents, or other temporary shelter (the Indian equivalent to homelessness). In all, the BIA found a need for 93,000 new or substantially rehabilitated homes in Indian areas. In 1970, the comparable figure was 63,000.

In a more personal glimpse, the Sault Ste. Marie Tribe of Chippewa Indians Home Improvement Program (HIP) surveyed 1014 homes out of 4000 in their seven county service area this year. 58% of the 1014 homes were in substandard condition and required immediate major repairs to ensure a safe and healthy living environment.

Four hundred seventy-two or 80% of the substandard homes needed some type of foundation work. Approximately 30% were not capable of holding up the structure and this caused the beams and floor joists to collapse. As a result of this, the homes were thrown out of square and created window and door gaps, air infiltration, furnaces to work overtime, and the side walls to buckle.

Four hundred eighty-nine or 83% of these homes had roofs that leaked or required other roofing repairs. These leaks are a source of air infiltration that caused medical problems for the families occupying the dwelling. Over a period of time these leaks will cause deterioration of the joists, rafters, insulation, and ceilings.

One hundred seventeen of the homes were beyond repair and needed complete replacement. In one of the homes an elderly handicapped lady was living with bats in the ceiling and they flew around inside her house at night. This same house needed a new well because this elder was hauling water to drink, bathe, and to flush her toilet. She also stated that she has frost build-up inside her house in the winter months. This woman has lived in this house for 40 years. The condition of this home was seen repeatedly in other dwellings.

Another major problem was that there were a number of one room homes that had the kitchen, bedroom, and living area altogether. Some of these were occupied by more than one family. Also the chimneys were another major problem as many of them were missing the flues or pieces of mortar. This caused toxic fumes to get back into the home. We had two of our elders hospitalized because of breathing in these fumes.

Since the majority of our elders are on a fixed income and don't have any other means to fix their homes, they live in these conditions until they can receive some type of assistance. This is just one example of what the needs in Indian Country are like.

The FY 90 Presidential budget proposes a zero funding level for new Indian Housing units and development. Additionally, the Bush Administration proposes zero for water and sanitation facilities needed for existing homes in Indian communities.

Total Public and Indian Housing modernization funds for FY 90 have been cut to $1.0 Billion. This is a reduction of $1.2 billion since FY 88. Assisted housing then will continue to need rehabilitation as these funds are depleted. The Administration has proposed that modernization be funded from a separate appropriation and also proposed a "fund matching" program requiring IHA's to produce a dollar for dollar contribution. There is no way that IHAs could possibly do so.

Indian housing requires immediate attention. There are many causes for this problem. Poverty, lack of job opportunities, and thus weak economies, remote rural locations, the trust status of land, and cultural differences complicate the easy provision of housing assistance but without Federal help, tribes have no means of financing homes.

PHA and IHA subsidy funds have been increased to $1.7 billion and is an increase of 2.0 billion over the past two fiscal years. The increase in subsidies indicates that IHAs are becoming consistently more dependent on the federal government for support of their operations. This is not a request for a reduction in subsidy but a request to Congress for help, these problems are very and are not going to go away.

In addition, HUD currently has identifyed fourteen IHAs in need of technical assistance on the basis of their Administrative Capability Assessment (ACA). A minimal amount of funding has been available to IHAs--$150,000 this year, while HUD has turned back funds available for this purpose. Funding for on-site technical assistance for IHAs should be increased to at least $300,000 per year for three years to serve these fourteen Indian housing authorities.

Also, we ask that you would prohibit further limitations to put Indian housing in the cuts to meet the Gramm-Rudman targets and other reduction measures. Last year Indian housing received 1,243 new housing units. Our need is far greater. A minimum of 6,000 units per year is needed to do the job right. If we are to stay at the present level of funding for Indian housing we will not meet the present needs until 50 or more years from now. This isn't the time to retreat from the goal of decent, safe affordable housing for all Americans. Your assistance in funding Indian housing is greatly needed and greatly appreciated. Thank you.

STATEMENT OF CLARA GREEN, EXECUTIVE DIRECTOR, PUEBLO OF LAGUNA HOUSING AUTHORITY

Senator **Fowler**. Ms. Clara Green, Laguna Housing Authority.

Ms. **Green**. Mr. Chairman and members of the committee, I thought I would use my notes, but I'm nervous as it is. So I'm going to do the best that I can.

I don't make you nervous, do I? [Laughter.]

It's my first appearance before the committee, sir.

Senator **Fowler**. Welcome.

Ms. **Green**. I am executive director for the Laguna Housing Authority. I am also here to represent the New Mexico Indian Housing Authority's Association which consists of 8 Indian housing authorities and representing 23 of the Tribes in our area.

I am here appearing before you because the administration has proposed zero funding for housing. I am also here to try to urge you and to try to convince you that we do desperately need housing in our areas.

We administer at Laguna Housing Authority 440 units which consists of rental and new and old mutual help.

Senator **Fowler**. Where is Laguna Housing?

Ms. **Green**. Laguna Housing is centrally located in the Southwest area. If you know Albuquerque, and I'm sure that you do, it's about 45 miles west of there.

Like Mr. Nolan said, we urge you to come visit our small reservation. We have currently 107 applicants on our waiting list. Of the 107, there is a family composition of at least 4, and they are young families. We have some that are living in very dilapidated homes right now, and the others, though we do have currently, of course, HUD housing on the reservation, there are some houses that are in need of repair.

Despite HUD's oversight and technical assistance, we still have a lot of homes that have been placed in the flood plains and serious problems with a lot of them.

I'm nervous about the yellow light already. [Laughter.]

So I'm going to conclude with this and thank the committee for this opportunity to appear before you.

Senator FOWLER. Well, thank you, Ms. Green, for your superb testimony. You didn't need your notes, as I knew you wouldn't, and also for your public service. It's a very difficult job as housing director I know.

Ms. GREEN. Thank you.

[The statement follows:]

STATEMENT OF CLARA GREEN

Madam Chairwoman, members of the Committee, my name is Clara Green, and I am the Executive Director of the Pueblo of Laguna Housing Authority. The Housing Authority has asked me to come before you this morning to express the urgent need for funding for 3,000 new units of Indian housing in fiscal year 1990. These funds are critical to the provision of housing for Indian people; there is nowhere else to turn.

The Pueblo of Laguna Housing Authority administers Indian Housing Programs for the members of the Pueblo of Laguna, a small tribe of about 6,500 people in central New Mexico. The Housing Authority is the primary provider of housing on the Reservation. While other Federal and tribal programs provide some housing assistance, the majority of Reservation residents rely on HUD-assisted housing. We currently have 107 families on our waiting list for homes. In most cases, these are families with children. Because we have no houses available, such families are currently forced to share homes with others. We have two families with eleven people living in three-bedroom houses, we have one family of eight people living in a two-bedroom house, and at least five families with children are living in dilapidated homes with dirt floors, no electricity, and no indoor plumbing. Although it is rare, I know of at least one Laguna family which lived in a van for over six months, waiting for a house to become available.

Even the housing which exists is often in extremely poor condition. Despite HUD's oversight and technical assistance, some houses have been built in flood plains, experience settling, and are quickly abandoned. We must deal constantly with cracking walls and ceilings and over-flowing septic tanks. Current sewage problems in our village of Paraje threaten to jeopardize the purity of the water in the nearby San Jose River where many of the children fish for catfish. We simply do not have the funds to maintain our projects in the safe, decent, and sanitary condition which is mandated and which we desperately desire. Our ability to serve our tribal members adequately is handicapped by a lack of funds, a lack of personnel, and a lack of equipment. For example, despite the fact that we must develop, operate, and maintain approximately 440 housing units, we have no funds for computers; as a result, our small staff must keep all financial, admissions, termination, grievance, personnel, maintenance, counseling, and construction records manually. I must share my office with one of my staff members, and the room is also used as our only meeting room.

Recently, much media attention has been focused on the plight of the homeless in America. The American citizens are shocked and dismayed. As a result, Federal, state, and local governments have implemented programs and have found dollars to help address this new problem. But for the Indians of this country, the problem is not a new one, although it is indeed one which is getting worse. For the Indians of this country, substandard housing is a fact of reservation life. For the Indians of this country, overcrowding is an inescapable evil. For the Indians of this country, the degradation and demoralization caused by cramming families together; by sleeping on floors and in unheated, unplumbed shacks; by forcing married couples to sleep in the same rooms—or beds—as their babies and their parents, is not new. The reality is even more shocking and dismal in that such unthinkable conditions have existed for decades, not just for a few years. And it is shocking and dismal for the Indians of this country to watch now as America helps the "new homeless" while once again ignoring the Indian people who were here first and whose needs are met last. I believe that the Indians without decent homes are as Important as the non-Indians without decent homes; that our needs are no less pressing merely because they are not "news"; that our silence does not indicate acquiescence; that our helplessness is not feigned.

Ironically, while the Indian population has finally begun to rise after its decimation in the last century, Indian Housing Program appropriations have plummeted dramatically since 1980. Now, the Administration's proposed budget for fiscal year 1990 allows for absolutely no funding for new construction of Indian housing. Zero units is an unacceptable proposal. Even last year's appropriations for one thousand new units only minimally addressed the severe housing problems present on Indian reservations, particularly since approximately 250 federally-recognized tribes compete for these units. A 1986 Bureau of Indian Affairs survey of housing needs in Indian country indicated that over 90,000 Indian families are without adequate housing. One thousand units does not address even new demand, let alone cure the existing housing shortage in Indian country. Based on the number of young people entering the housing market each year, I believe that the housing shortage will grow exponentially and will continue to rise unless increased funding is appropriated now. I am asking this Appropriations Committee to help us address the problem now, before it gets worse and before the cost to remedy it grows.

The Pueblo of Laguna Housing Authority takes seriously its obligation to provide adequate housing for its members. But such housing cannot be provided with zero dollars. To provide meaningful assistance in addressing critical Indian housing problems, the Pueblo of Laguna Housing Authority respectfully urges that the Committee appropriate funding for the construction of 3,000 new units for Indian housing programs in fiscal year 1990. In House Report No. 100–701 ("House Report"), which accompanied last year's appropriations bill for the Department of Housing and Urban Development, the Appropriations Committee recommended a total of $71,850,788 for 1,000 Indian housing units. Based on these figures, a funding level of $215,552,364 for 3,000 units is necessary.

On behalf of the Pueblo of Laguna Housing Authority, I wish to express our appreciation for this opportunity to appear before the Committee and to make our desperation known. At this time I would be happy to try to respond to any questions which you may have regarding my testimony on the housing dilemma at Laguna.

STATEMENT OF FREDDIE PESO, COMMISSIONER, APACHE TRIBE OF THE MESCALERO RESERVATION HOUSING AUTHORITY

Senator FOWLER. Mr. Frank Armajo.

Mr. PESO. I'm Frederick Peso from the Mescalero Apache Tribe.

Senator FOWLER. All right. Well you can go ahead.

How do you pronounce your name?

Mr. PESO. Well, Freddie Kaydahzinne was supposed to be here, but I am Frederick Peso, P-e-s-o, like dollar.

Senator FOWLER. Are you being devalued daily? [Laughter.]

Mr. PESO. Something like that.

Senator FOWLER. We are glad to have you, Mr. Peso.

Mr. PESO. Mr. Chairman, I'm a Commissioner of the Apache Tribe Mescalero Reservation Housing Authority and also the Executive Secretary of the Mescalero Tribal Council.

I'm here on behalf of the tribe. We heard that the administration has zero funding for Indian housing, and this is something that we are very concerned about. We don't have the housing that we need to house all of our people on the reservation. We've got at least 30 percent of our people that still don't have any housing. We have people that are living in brush arbors, we have people that are living in tents and overcrowding.

There are up to 12 or 13 people living in 2-bedroom homes or 2-room homes. They have to sleep on the floor and wherever they can, and that's where the brush arbors come out and the tents, and that's even in the middle of wintertime, too, and we live in the high country.

We are concerned about getting housing for our people. Some of them have to leave the reservation and go further and further away, but right outside the reservation.

As you may be aware, Ruidoso is a resort community and the housing is so extremely high that it's just not suitable for the people to move there. Alamogordo is a military town and quite a distance away also, and it's not a very good place for housing for our people.

Living in small houses and living in overcrowded conditions, a lot of the people that do have housing, we have with the overcrowding of several families in one house. It doesn't help with the privacy of the families and it doesn't help with the education of the students that are going to school for studying or anything else. And, as I'm sure you would realize, there would be a lot of sickness that would spread fast if one person gets ill.

Our concern for housing is bad right now, and we've got about 50 percent of the tribe that is under 18. So you can imagine what it's going to be like in just a few years. These young families are getting married and we'll need quite a bit more.

With the need that we're going to have, I'm not only asking for ourselves, but for all the housing within Indian country is just as badly needed. We are asking for a minimum of 3,000 homes, but the actual need is 6,000, and that's at a minimum. We can't see that being cut.

We are asking that we be considered, not because we want big homes or anything. We just want a roof over our people's heads, and if there are going to be cuts, and we realize there is a deficit, it might be well to look at the cuts that are going to maybe be inconvenient for a group rather than someone that it's going to be devastating to.

Senator FOWLER. What is the approximate increase of the Apaches now, the population increase?

Mr. PESO. We have a population of about 3,025 right now, and with 50 percent under 18, it's going to increase rapidly.

Senator FOWLER. Is that true in all the tribes, a substantial increase?

Ms. GREEN. Yes.

Senator FOWLER. As more and more people under age 15, 18, and 21.

Mr. NOLAN. I think that works both ways, too. As you get older, you have to take care of another segment of your population that requires not living in an arbor or some other devastating situation. So as you increase your population on this end, you have another need that develops that requires a lot of attention at the other end of your life cycle also.

Ms. GREEN. At Laguna we have over 1,000 individual homes, and of that there is about 536 that consists of HUD and trailer homes. The rest are all adobe built traditional homes which are in need of repair.

Senator FOWLER. Thank you, Mr. Peso, very much.

[The statement follows:]

STATEMENT OF FREDDIE PESO

Madam Chairwoman, members of the Committee, my name is Freddie Peso, and I am both a Commissioner of the Apache Tribe of the Mescalero Reservation Housing Authority and Secretary of the Mescalero Tribal Council. The Housing Authority is frightened by the proposed zero funding for Indian Housing and has asked me to urge the Subcommittee to appropriate funding for the construction of 3000 new units for the Indian Housing program in Fiscal Year 1990.

The Mescalero Reservation lies in the mountains of south-eastern New Mexico. Almost 30% of our three thousand tribal members have no homes of their own and no place to live. Unlike the homeless in the cities, Mescalero Apache people cannot look for housing nearby, as no housing exists. The homeless are often forced to leave the Reservation, their families, their community, and their way of life, in search of housing. The nearest towns are Ruidoso--a resort town best known for hosting a million dollar quarterhorse race--and Alamogordo--a military town. Neither community offers attractive housing opportunities for our tribal members; finding an affordable house in a resort town is difficult at best, and finding housing in a military town usually requires some connection with the military. So our tribal members must move farther and farther from home to find a place to live.

The problem of homelessness on Indian reservations is different in other ways from the problem in the cities. While occasionally we hear of a homeless Indian family forced to live in a car, Indian people tend to honor their obligations to family and community without question, and homeless families are taken in by friends and relatives. But the homes of friends and family often are already overcrowded. Recently we had a family of twelve living in a one bedroom mobile home. The Housing Authority was able to find limited funds with which to build a small two bedroom home in which the family currently lives, but the cramped living conditions are extreme. It is not unusual for many of our people to sleep every night on the floor; some sleep outside in tepees and under lean-tos made of branches, even during the winter. Overcrowding is not just unpleasant. It means that husband and wife never have the privacy that they need; that students do not have a place or the solitude necessary for effective studying; and that the illnesses to which children are so susceptible spread throughout families with frequency. The unnatural crowding cannot help but strain relationships and tempers and undermine most if not all attempts to lead a decent and productive life. Moreover, the problem of overcrowding is getting worse instead of better. Half of our tribal members are under eighteen, and soon these young people will be having families of their own. The housing crisis we are experiencing today will double in severity almost overnight, and we are trying desperately to find ways to meet this threat of an increased demand.

Our Housing Authority administers 414 HUD homes at Mescalero, most of which are low rent units. While these units tend to have heat, running water, and electricity, many of the other houses and apartments on the reservation do not. Water must be hauled in daily for cooking, washing, and drinking. Where the houses do not have running water, the families must rely on outdoor privies, an inconvenience at best and a torment in our frigid mountain winters. Even the HUD houses which our Housing Authority builds and maintains are inadequate in many ways; our newest project features only one door per house because we simply didn't have enough money to provide two, and many of the streets and driveways are not paved, causing inaccessibility and terrible inconveniences when it rains or snows. Approximately 75% of our houses need renovations due to settling problems, poor construction, and poor design, and the overcrowding has made impossible demands on our two sewer lagoons. The newer lagoon is at capacity, and the older is over capacity, causing heightened concerns about seepage into the underlying water which finds its way down the mountain to the non-Indian communities. We cannot afford to ignore any of these problems.

As you know, the Administration has proposed zero funding for constructing new units of Indian housing in Fiscal Year 1990. Such a proposal cannot be justified. We were stunned and dismayed when Congress appropriated funds for only 1000 new units last year. Given the proven need for housing that has been discussed by my fellow Indian witnesses, 1000 units are inadequate; to propose zero units is callous and unthinkable. We understand that the need for housing is nationwide, but the need is particularly severe on reservations. We are not asking for big homes or vacation homes or fancy homes; we are not asking for a bedroom for every family member; we are not asking for playgrounds and community centers, even though we, too, would like to have these amenities for our families. What we are asking for is a minimum of standard homes for our people. Thus, we respectfully request an appropriation of $216,000,000 for 3000 new units to be parceled out in Indian Country in order to alleviate the despair and suffering caused by overcrowding and substandard housing. Indian Housing Authorities are required by federal law to provide "decent, safe, and sanitary housing" on the reservations, and we cannot do it. We simply do not have the money to provide even the minimum. While we support this country's attempt to deal with the deficit and to climb out of the hole of debt which has grown deeper over the years, we feel that the belt must be tightened around the fatter waists, not around the skeleton waists of Indian Housing. It is our hope that this Subcommittee will seek ways to cut appropriations from those for whom a cut will be an inconvenience, not from Indian Housing Authorities, for whom a cut will be a devastating blow.

And now, I would like to thank you for providing the Apache Tribe of the Mescalero Reservation Housing Authority this valuable opportunity to express its frustration and to make this plea for money. I will be happy to try to answer any questions which you may have concerning the gravity of our housing situation at Mescalero.

STATEMENT OF GILBERT JONES, VICE CHAIRMAN, FORT MC DOWELL HOUSING AUTHORITY

Mr. JONES. Senator Fowler, if I might introduce myself.

Senator FOWLER. Please.

Mr. JONES. I am not on this panel. I was on the next panel. My name is Gilbert Jones from Fort McDowell. Since the other person wasn't here, I took it upon myself to sneak in here. [Laughter.]

Senator FOWLER. Well, you are accepted through grace and not by works lest any man should boast. [Laughter.]

What's your name?

Mr. JONES. My name is Gilbert Jones, Senior.

Senator FOWLER. Fine, Mr. Jones.

Mr. JONES. I'm the vice chairman for the Fort McDowell and Mohabe Apache Indian Community, and I'm also one of the Housing Commissioners. I have been the former Executive Director for the Fort McDowell Tribe from 1981 until last year when they decided my services were more needed at the travel level than at the housing level.

But I have been involved with housing and I have been concerned about it. Like the other individuals have testified, our tribe, we are 452 when I left, and they have increased by one or two more because there were several who were expecting, but 60 percent of those people are under 18 years of age.

We have 64 units of HUD that we manage, and the reason for that is that since 1959 or the late 1950's until 1981 when Interior Secretary Watt took away the threat of Oram Dam, which was part of the central Arizona project which would have flooded our reservation, the Fort McDowell Indian community was not as fortunate as the rest of the Tribes in securing Government financing for any type of program that we had there because we were told that it would be better for us to move because if the dam broke we were going to get flooded anyway.

In 1964, we were given 10 floatable houses that we were allowed to build within the flood plain. In 1976 and in 1978, we were given 8 more and then 6 more. The need is very great there because we do have——

Senator FOWLER. Have they needed to float?

Mr. JONES. No; as a matter of fact, they finally came back and did some rehab in 1982 to those 10 units. They finally agreed that we were going to stay there.

Senator FOWLER. But they are in the flood plain?

Mr. JONES. They are in the flood plain, yes; and now that threat has been taken away because of the alternative to Oram Dam which finally looks like it has completely washed away anyway.

So, anyway, we are concerned with the zero funding that has been allowed for Indian housing. We belong to the Southwest Indian Housing Authority's Association with 42 tribes in the Southwest, and we are looking also at perhaps 6,000 and, if not, we'll settle for 3,000 units that we so desperately need.

The Fort McDowell Tribe has been very fortunate in that we have been able to continue to bail out our members as far as the delinquency program is concerned for our Housing Authority. I think we are one of the few tribes that has done that, and we have done that year after year thanks to our self-sufficiency and are able to bring economic development into the reservation.

So with that, Senator, I wish to thank you.

Senator FOWLER. Thank you very much, Mr. Jones, and all of you. You have done a very good job in describing the need. As I told you, you have at least one additional ally.

PANEL 3

Panel 3, the Mortgage Bankers Association, the Association of State Flood Plain Managers, Public Housing Authorities Directors, the National Association for the Southern Poor, and National Association of Housing and Redevelopment Officials.

We will start with Ms. Canavan of the Mortgage Bankers Association.

Welcome.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND DEPARTMENT OF VETERANS AFFAIRS

STATEMENT OF SHAROM M. CANAVAN, DEPUTY LEGISLATIVE COUNSEL, MORTGAGE BANKERS ASSOCIATION OF AMERICA

Ms. CANAVAN. Good morning, Mr. Chairman.

My name is Sharom Canavan. I'm deputy legislative counsel with the Mortgage Bankers Association of America.

I appreciate the opportunity to appear before you today to testify on the fiscal year 1990 appropriations as well as an issue in the fiscal year 1989 supplemental appropriations bill that has arisen with regard to the VA Home Loan Guaranty Program.

MBA asks that sufficiently high levels of credit activity be provided to the subcommittee for fiscal year 1990 for the nonsubsidized FHA mortgage insurance programs and the GNMA mortgage-backed security program.

MBA recommends that these levels be set at the appropriation freeze levels that were enacted in fiscal year 1989 and have been included in the conference report on the budget resolution. That is $96 billion for FHA and $144 billion for GNMA mortgage-backed securities.

At the present levels of interest rates and activity these would appear to be adequate. If actual activity falls below these levels, there will be no carryover of unused authority or any economic impact associated with unobligated credit authority.

There has been a substantial amount of negative publicity in the last several weeks about the FHA coinsurance programs. MBA has in the past indicated concern directly to HUD about insufficient HUD monitoring of these programs.

FHA staffing should be increased to improve oversight in program compliance. FHA staff in both the field and at headquarters may be currently overextended and in some instances underqualified to monitor complex multifamily financing packages.

MBA is particularly concerned about an issue in the fiscal year 1989 supplemental appropriations for the VA Home Loan Guaranty Program. In its proposed fiscal year 1990 budget, the VA reported, as required by the program authorization, that it would make a change effective October 1, 1989, to regulations affecting the VA's no-bid calculation formula. The fiscal year 1989 supplemental appropriation request assumes that the regulation will be implemented sooner, in August of this year rather than the original October 1 date published in the Federal Register.

Further, the regulation as currently proposed contradicts the statute. The proposed regulation would require the VA to determine in its calculation the costs of the property and estimated costs of Government borrowing.

Chairman Alan Cranston of the Senate Veterans Affairs Committee has requested that you include language in the supplemental to prohibit implementation of the regulations until October 1, 1991.

We respectfully urge this subcommittee not to permit the VA to move this October date forward.

Thank you for your attention and MBA would be pleased to furnish any additional information on these issues.

Thank you.

Senator FOWLER. Thank you for your precision and comprehension.

[The statement follows:]

STATEMENT OF SHARON M. CANAVAN

Mr. Chairman and members of the Subcommittee, my name is Sharon M. Canavan. I am Vice President and Deputy Legislative Counsel of the Mortgage Bankers Association of America.* Accompanying me today are Burton C. Wood, MBA's Legislative Counsel, and Ann Hadley vom Eigen, MBA's Associate Legislative Counsel.

We appreciate the opportunity to appear before you today to testify on the FY 1989 Supplemental Appropriation Bill and FY 1990 appropriations for the Department of Veterans' Affairs VA), Department of Housing and Urban Development (HUD) and other programs of interest to mortgage bankers.

The focus of our comments for FY 1990 will be on (1) the necessity of establishing a sufficiently high credit budget limit for the non-subsidized Federal Housing Administration (FHA) mortgage insurance program, and sufficiently high guaranty authority for the Government National Mortgage Association (GNMA) mortgage-backed security (MBS) program; (2) the financial requirements of these programs and their treatment in the FY 1990 Congressional Budget Resolution, (3) several resource requirements for FHA, VA and the Environmental Protection Agency (EPA); and (4) the Administration's revised legislative proposal to change the budgetary treatment of Federal credit programs.

We also ask the Subcommittee to consider an issue which may be addressed in the Senate version of the FY 1989 Supplemental regarding a proposed change in Veterans Administration's regulations concerning the home loan guaranty program.

HUD PROGRAMS

Credit Ceilings on FHA and GNMA Activity

The Administration's FY 1990 Budget again this year proposes that Congress establish through a credit budget, the volume of new Federal direct loans, loan guarantees and insurance. The credit budget not only tracks, but limits some of these programs by establishing credit ceilings in the appropriations bills. MBA has consistently maintained that credit limitations on the self-supporting FHA mortgage insurance and GNMA-MBS programs are not necessary. These programs generate net revenues for the Federal government, and credit ceilings are counterproductive in demand-driven programs such as the Federal mortgage credit programs.

Consumer demand for Federal mortgage credit programs, and in particular FHA and GNMA, is expected to be steady, and mortgage interest rates are expected to decline modestly in the coming months. In addition, programmatic changes in the 1987 Housing Act, regarding maximum loan size and increased ARM authority, have kept the dollar volume of FHA loans originated high.

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*The Mortgage Bankers Association of America is a nationwide organization devoted exclusively to the field of housing and other real estate finance. MBA's membership comprises mortgage originators and servicers, as well as investors, and a wide variety of mortgage industry-related firms. Mortgage banking firms, which make up the largest portion of the total membership, engage directly in originating, selling, and servicing real estate investment portfolios. Members of MBA include:

- o Mortgage Banking Companies
- o Commercial Banks
- o Mutual Savings Bank
- o Savings and Loan Association
- o Mortgage Insurance Companies
- o Life Insurance Companies
- o Mortgage Brokers
- o Title Companies
- o State Housing Agencies
- o Investment Bankers
- o Real Estate Investment Trusts

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There is the continual threat that FHA and GNMA credit ceilings, as they have in the past, will be inadequate to meet demand. Consequently, in the event the Subcommittee decides to place limits on these programs, MBA recommends that they be set for FY 1990 at the appropriation "freeze" levels enacted in FY 1989, rather than at the lower level of the Administration request. These freeze levels would set credit ceilings at $96 billion for FHA and $144 billion for GNMA in contrast with the Administration proposed levels of respectively $67 billion for FHA and $75 billion for GNMA. It is our understanding that the Senate-reported and House-reported Congressional Budget Resolutions would accommodate those levels. The freeze levels appear to be adequate, and if actual activity falls below those levels, there will be no carryover of unused authority or any economic impact associated with unobligated credit authority.

FHA Resources

There has been a substantial amount of negative publicity in the last several weeks about the FHA 221(d)(4)and 223(f) coinsurance programs. Although we cannot speak to the substantive matters under investigation, we have indicated our concern about insufficient HUD monitoring of the program in the past and hope that it will be increased. While there may unfortunately have been some abuses in this program, many of our members have successfully used the programs to finance construction and repair of low and moderate income multifamily housing.

We urge the Subcommittee to consider increased HUD staffing levels in this area to improve oversight and program compliance.

We are concerned that FHA's general staffing levels, in both the field and in headquarters may be currently inadequate and further urge the Subcommittee to reject cuts in salaries and expenses at a time when oversight needs are high.

VETERANS' AFFAIRS HOME LOAN GUARANTY PROGRAM

MBA believes that Congress, in revising the Veterans Affairs home loan guaranty program, in the "Veterans' Home Loan Program Improvements and Property Rehabilitation Act of 1987" (PL 100-198), began to evaluate and address problems in improving the financial soundness of the program. Both Congress and the Administration retained the entitlement nature of the home loan guaranty program. Given that action, it is incumbent on Congress to provide the program with the necessary appropriations.

These appropriations are substantial, but it is important to point out that they reflect a substantial economic downturn in the Southwest that is moderating. Also, the programmatic changes made in recent years should improve the health of the Loan Guaranty Revolving Fund. There are now stricter underwriting guidelines for borrowers, which have also been extended to assumptors of VA-guaranteed loans. Efforts to offer financial counseling to veterans who are delinquent on their loans are intended to reduce the number of foreclosures and losses. Another change is the strengthening of qualifications of appraisers. It is too soon to assess the cumulative impact of these program improvements, but these changes should have a positive effect on the program.

In its proposed Fiscal Year (FY) 1990 budget, the VA reported it would make a change effective October 1, 1989, to regulations affecting the VA's determination of whether or not to acquire and dispose of property guaranteed under the home loan program (i.e. to bid, or not to bid). The regulations propose to include the "cost" of government borrowing ("cost of funds") to acquire a foreclosed property among the VA's cost when calculating the "(net) value" of a property. The VA notified the House and Senate VA Committees January 31, as it was required to do, that it intended to implement this so-called "no-bid" formula change for FY 1990 on October 1, 1989. The Administration's FY 1990 budget estimated that adoption of "the cost of funds" change could reduce by 10 percent the properties the VA acquires. This translates into a 30 percent increase in the number of properties that lenders acquire.

In March, the supplemental request for FY 1989 which the VA sent to Congress, assumed that the VA would begin implementing the "cost of funds" regulation in FY 1989 rather than on October 1, 1989. The proposed revised definition of "net value" used in the new "no-bid" calculations is in direct conflict with the statutory language defining "net value." The statute (the "Deficit Reduction Act of 1984", P.L. 98-369) clearly allows only those amounts which the (Secretary) would incur to be deducted from a property's fair market value in the VA's "bid-determination", not those amounts which the government would incur. Because the (Secretary) is not charged any interest costs for acquiring a foreclosed property, the cost of government borrowing is not a cost incurred by the (Secretary) and not permitted under the statute to be included in the definition of "net value."

The proposed regulation would therefore shift costs currently borne by the government to private lenders who did not anticipate incurring these costs when VA home loans were originated. This change would further deter lenders from participating in the VA home loan guaranty program. In a January 1989 national survey done by MBA, almost 70 percent of the lenders surveyed said they would limit their VA-guaranteed loans if VA rules were changed to increase the number of foreclosures where the lender must acquire and dispose of the property.

By proposing to implement the "net value" definition change on August 1 for FY 1989 rather than on October 1 for FY 1990, the VA has ignored the notification procedure set forth by Congress in the language of the Conference Report 98-861 accompanying P.L. 98-369, the "Deficit Reduction Act of 1984", which enacted the no-bid formula. If the Administration implements this change prior to FY 1990 it will also affect the "budget baseline" in a manner that could force the Veterans' Affairs Committees to make spending cuts and beneficiary changes in the program.

MBA strongly opposes this change in the "no-bid" calculation. If Congress does not act to prevent this change in the "net value" definition, irreversible damage will be done to the VA home loan guaranty program. Chairman Alan Cranston of the Senate Veterans' Affairs Committee has requested that you include language in the supplemental to prohibit implementation of the regulations until October 1, 1991. We ask that you support that position. Inclusion of this provision would protect the Veterans' Committees from major "scorekeeping" problems in considering reauthorization of the program this year.

MBA would also like to bring to the Subcommittee's attention some deficiencies in the VA's requested resources. VA staffing over the past several years has been insufficient to handle the volume of defaults and foreclosures. Yet, the VA proposes to eliminate 45 full-time employees from the administration of the home loan guaranty program. The proposed reduction would further exacerbate the problem. The personnel are needed for increased servicing of delinquent mortgages and for management and disposition of the large inventory of acquired properties. We respectfully urge that Congress not agree to this untimely reduction.

ENVIRONMENTAL PROTECTION AGENCY

The real estate finance industry is increasingly concerned about environmental problems, and MBA, in response, has begun the process of educating its members about the potential health effects various building materials may have on human health and the environment. HUD is presently undertaking several studies and projects evaluating the health hazards of such elements as lead-based paint, and we appreciate the Subcommittee's willingness to fund studies of such importance.

In addition, we would like to point out to the Subcommittee that our members have become increasingly concerned about the health hazard of asbestos in public and commercial buildings and are taking actions on their own in this regard.

The Environmental Protection Agency (EPA), which is also funded through this Subcommittee, received $2 million last year (to be matched on a 50/50 basis by the private sector) to determine actual airborne exposure levels present in buildings, to characterize peak exposure episodes and their significance, and to evaluate the effectiveness of asbestos management and abatement strategies in a scientifically meaningful manner. MBA contributed funds to this effort last year during the initial solicitation of the private sector. We are presently evaluating the interim report of the Health Effects Institute and discussing with other industry groups how the additional funds may be raised.

In addition, EPA has identified as an urgent matter the need to assess objectively the effectiveness of the Asbestos Hazard Emergency Response Act (AHERA) schools rule and other current activities. Many building owners and investors in commercial properties are concerned that an AHERA-type rule may become applicable to public and commercial buildings and would be interested in seeing the EPA, as it suggested, assess the effectiveness of the schools program that it presently administers. We would encourage the Subcommittee to appropriate funds for this assessment.

FEDERAL CREDIT LEGISLATION

MBA is concerned about recently introduced legislation which proposes changes in budgeting for Federal credit programs, the "Federal Credit Reform Act of 1989" (S 584, HR 1127, hereinafter referred to as the "credit legislation"). This legislation would impose dramatic new Federal credit program restrictions, and would require additional appropriations that would place pressure on Congress to make cuts in these programs.

The stated purpose of this legislation is to consolidate management of all Federal credit programs within the Treasury Department and to impose budgetary requirements and controls that would limit the role of Federal credit programs. The legislation would cover all direct loan, loan guaranty, and insurance programs of Federal agencies and of entities partially or wholly owned by the government. Thus, it would cover the FHA insurance and the VA home loan guaranty program, as well as the GNMA MBS program.

A disturbing objective of the legislative proposal is quantification of the claimed "implicit subsidy" for Federal direct loan, guaranty, and insurance programs. This "implicit subsidy" is defined as the estimated net present value, based on a comparable market discount rate, of the difference in cost to the borrower between a guaranteed loan and alternative private financing potentially available to the same or a similar borrower for the same or a similar purpose. The "credit legislation" would require large requests for appropriations of budget authority, which would have to be approved by Congress before any loans could be made, insured, or guaranteed.

If the law is passed, the Administration estimates that, in FY 1990 alone, FHA would require an additional $804 million in budget authority, GNMA would require an additional $1.4 billion, and VA would require an additional $769 million to accommodate the credit proposal. MBA believes these budget requirements would place pressure on Congress to decrease credit program activity or increase or establish fees to offset those appropriation requirements. Through this device, we feel, the Administration is trying to accomplish what Congress has refused to accede to in the past--a drastic reduction or elimination of the programs.

MBA does not question that there is value in a Federal credit program. One component of that value is the market efficiency that results from standardization, homogeneity and volume. This component is particularly applicable to mortgage credit programs. The second component of that value is the degree of Federal backing, (e.g., full or partial guarantee) and its effect on lenders and the secondary market. The third component of that value is the financial subsidy which exists to the extent that fees do not completely cover program defaults and administrative costs. As proposed, the Administration credit proposal would tax all three components of that Federal credit program value. MBA believes that only the third component, the actual cost to the government, should be considered in determining the appropriations necessary for a program.

MBA believes that identification of these "implicit subsidies" falsely misrepresents the actual dollar costs of these programs and would place Federal credit programs on a basis inconsistent with other Federal programs. In no other instance does the Federal budget reflect the claimed economic "displacement" effect of a Federal program, nor does MBA believe it is appropriate to reflect this component. Consequently, budgeting for the estimated economic impact of credit programs, while not doing it for spending programs, penalizes these programs and invites unfair comparisons.

MBA thanks the Subcommittee for the opportunity to testify and for its attention to these matters.

FEDERAL EMERGENCY MANAGEMENT AGENCY

STATEMENT OF REBECCA Q. HUGHES, STATE DIRECTOR, REGION III, ASSOCIATION OF STATE FLOOD PLAIN MANAGERS

Senator FOWLER. Ms. Rebecca Hughes, Association of State Flood Plain Managers.

Ms. HUGHES. Good morning.

Senator FOWLER. Good morning.

Ms. HUGHES. I am also here representing the State of Maryland since I manage their flood plain management program.

Senator FOWLER. I noticed for some strange reason that these panels are heavily weighted with Maryland. [Laughter.]

Ms. HUGHES. Sir, we try to reduce, especially for nonprofits, we try to reduce the travel costs, and Maryland is so close. [Laughter.]

Senator FOWLER. I can't quarrel with that answer.

Ms. HUGHES. I'm here to comment on really a part of FEMA's budget, the Federal Insurance Administration's National Flood Insurance Program.

It was interesting in the previous panel to hear at least two of the members comment on housing in flood plains. That's a problem we deal with, that members of my organization deal with daily. The headlines in the last couple of days, 13 straight days of rain just here in Maryland, and certainly what is happening in Texas raises the awareness of what happens when there is unwise development of flood plains.

Our job is to try to deal with that, both proactively, to keep new development out, but also let's solve the problem of what is already there.

I guess I have four major points to make.

One, is this Nation is severely underinsured. It's a sad statistic that only about 14 percent of the structures that are in the flood plains have flood insurance despite the fact that it's a mandatory insurance.

Part of the problem is its expensive insurance, but part of the problem, we believe, is also the Federal regulators and lenders are not doing their job.

I'm happy to report that FIA has been working with them and I think some progress has been made, but we are not willing to concede that the job is done. It's important fiscally because the more people we bring under the program the less impact it has to the Federal Treasury in general, but also the more funds that may be available to encourage wise flood plain management.

One of our buzz words for the 1990's is mitigation, and that's really dealing with the structures that are already there. There are some very clear examples of what can be done with very little funding to help homeowners satisfy or solve those problems.

Community compliance. What the communities are doing in return for this program is often questioned. Currently FIA funds, a very minor part of their budget funds States to go out and visit communities face to face and find out how they are doing. There has been no comprehensive report on compliance. I believe they are working toward that. The program has been in effect for 4 years. So some answers should be there.

We would, however, like to request an additional $1 million in that program, it's called the Community Assistance Program, in order to help States encourage community programs that go above and beyond the national minimums. National minimums are just that. They do not solve individual community problems.

The additional assistance paired with a developing initiative with FIA, the community rating system, we think will result in a great deal of new mitigation efforts. They will by and large be locally or State funded, but the assistance, the technical assistance needs to come from the State level with Federal support.

Thank you, sir.

Senator **Fowler**. Thank you, Ms. Hughes.

I just confess as an old city councilman it shows something about the humaneness, I guess, of this country that we allow people to build in the flood plains. We tell them so they assume the risk, but then they get flooded out when the creek flows. It happens all the time in Atlanta, and then rather than just saying well you did it yourself, we rush in with all sorts of emergency aid. That's what you call the proactiveness of not allowing people to build on flood plains?

Ms. **Hughes**. Well, the reactive is to deal with the buildings that were there before a community committed to regulate their flood plains. Most communities have said, you know, we will regulate development. Of course, very few will ever say we will prevent it, but they say they are so afraid of the taking question, but they say they will regulate it.

We have a concern with this because those minimum standards that allow regulation, we believe in some cases, result in new flood prone development. I don't think that's the intention, but in fact that happens, which is why we would like to have more opportunity to work with communities to tailor programs for the community.

Senator **Fowler**. Thank you very much.

[The statement follows:]

STATEMENT OF REBECCA Q. HUGHES

The Association of State Floodplain Managers is the only national organization of state and local officials responsible for managing flood-prone areas. We represent those state and local agencies that implement the floodplain management aspects of the National Flood Insurance Program (NFIP). We are also active in flood hazard mitigation and other activities to reduce and prevent flood damages.

Last year marked the 20th anniversary of the National Flood Insurance Program. We believe the program has evolved significantly and look forward to continuing our role in working with the Federal Emergency Management Agency (FEMA) for further improvements that will reduce flood losses and costs to the Nation.

The ASFPM has long held a respected professional relationship with the Federal Emergency Management Agency. Significant efforts have gone into encouraging FEMA initiatives that improve state and local capabilities. The successful Community Assistance Program, through which the Federal Insurance Administration (FIA) augments its small staff with state personnel to monitor and train local officials, exemplifies these initiatives. In many states this has resulted in the development of professionals with strong commitments to reducing flood hazards and damages throughout the nation. FEMA and the Federal Insurance Administration (FIA) should continue to investigate ways to improve and expand these floodplain management capabilities as well as to better utilize those talents to address some areas of continuing concern.

Our concerns can be summarized under three major categories:

1. *The Nation Is Underinsured Against Flood Damages.*—The total number of flood insurance policies has remained essentially static since 1980 when premiums

started to increase. Only an estimated 14 percent of structures in identified flood hazard areas have insurance. The ASFPM believes that causes for this severe underinsurance situation are inadequate implementation of the mandatory purchase requirement by lenders, and attrition since policy holders can easily cancel their policies. Also contributing is the fact that flood insurance rates are high given the average floodplain occupant's perception of the risk of flooding.

2. *New Flood Loss Mitigation Initiatives Are Needed To Reduce Damages To Existing Buildings.*—Flooding results in two levels of damage. Major floods cause virtual destruction of buildings. Less intense or forceful flood events may not render structures uninhabitable, but are the cause of minor and often frequent, repeat damage. The cycle of build-damage-rebuild must be broken in order to significantly reduce the Nation's flood damages and costs. Mitigation programs must be developed to accomplish this goal.

3. *Flood Loss Prevention Efforts To Minimize Future Losses Must Be Strengthened.*—Prevention of future losses or damages is the primary objective of floodplain management and regulatory programs at the state and local levels. Since the initiation of the NFIP, FIA has steadily and admirably worked to provide maps and regulations for special flood hazard areas. These tools are the foundation of basic efforts to minimize the Nation's susceptibility to flooding.

Floods cost the Nation much more than the dollar figures that appear in the Federal budget. There are many expenditures related to flooding in addition to the costs to the Federal Emergency Management Agency (FEMA) for disaster assistance and flood insurance claims. Federal, state, and local government agencies pay for regulating floodplains, floodplain studies and maps, flood fighting, and flood control projects. A percentage of disaster assistance for Presidentially-declared disasters and all of the recovery costs of floods that are deemed manageable without Federal assistance are borne by state and local governments. Individual businesses and homeowners also pay for property damages, lost business productivity, and suffering.

In an average year, floods in the United States kill over 150 people and cause over $5 billion in damage to property. These numbers are increasing as pressures increase for more floodplain development.

Our Association wants to stop the increases in flood damages and the corresponding increases in government expenditures. We want to reduce the disruption, damage, and emotional distress caused by flooding. Our state and local members work every day to manage new construction in floodplains and to advise and assist property owners on how to reduce damages to development that predates these management practices. FEMA's flood insurance and hazard mitigation programs help in these efforts. However, only through close cooperation with state and local governments can these Federal programs be effective.

RECOMMENDATIONS

There are eight areas of concern in FEMA's Appropriations for fiscal year 1990 where we have recommendations:

1. *Mandatory Purchase And Policy Retention.*—Contributing to the problem of the Nation's underinsurance situation is lax implementation by federally-regulated lenders of the requirements to get and keep flood insurance on structures in designated flood hazard areas. Estimates indicate that only 14 percent of these at-risk structures have flood insurance policies. Part of the problem is the nearly 400,000 policies that are dropped each year. We recognize that FEMA does not have direct authority to enforce banking regulations. However, it is clear that if banks properly require the purchase and retention of flood insurance, the policy base will grow and revenues to the National Flood Insurance Fund will increase. In turn this will reduce the likelihood of draws on the Federal Treasury in the event of major flood disasters. Congress must direct attention to improvements in lender performance. FEMA's activities in this regard must be continued.

2. *Section 1362—Acquisition of Flood-Damaged Buildings.*—The Section 1362 program is intended to solve significant damage problems by providing funds to purchase heavily damaged structures. Due to cumbersome administrative procedures and overly restrictive eligibility criteria, the program appears under-utilized. Of the 1,257 applications received since the program's inception, only 727 have been approved. We are concerned about the lack of a budgeted line item for fiscal year 1990. We recognize that the past few years have been relatively dry and without substantial widespread flooding that would generate a demand for Section 1362 funds. We are concerned that funds may not be available if the need arises this year.

3. *Mapping—The Management Tool.*—The foundation of both the flood insurance and landuse/floodplain management programs is the Flood Insurance Rate Map (FIRM). FEMA has nearly completed the initial mapping for almost 18,000 communities, yet this is far from the end of the mapping effort. Many states and local communities are in need of map revisions and updates. In particular, maps that are more than 5 years old are poor management tools in areas of rapid growth. These areas are experiencing more and greater floods due to runoff from upland development which has increased runoff and rendered the flood maps obsolete. Remapping must keep pace with development in order for the NFIP to effectively continue to reduce flood damages. FEMA must be provided sufficient funds to identify remapping needs, to provide the updated studies and maps, and to rapidly convert to an automated Geographic Information System to improve the quality of the map products.

4. *Coastal Erosion.*—In the past, the NFIP has paid some claims for structures that collapsed due to erosion. Since claims were paid only after the buildings fell into the water, the opportunity for relocation prior to certain collapse was lost. The "Jones/Upton" Amendment of 1987 (Section 1306) provided for insurance payments for structures that are subject to imminent collapse due to erosion. Payments are made for relocation of the structures to less hazardous sites or for demolition in cases where structures cannot be safely moved. Professional floodplain and coastal zone managers recognize that community-level erosion zone management will be a crucial element in avoiding future hazardous situations and costs. As with floodplain management, communities will rely upon maps or designated erosion rate zones. Along much of the Nation's coastlines, data are available for actively eroding areas. For fiscal year 1990, only $2 million is allocated to collect, review and prepare these data into usable management tools. We recommend a minimum of $5 million per year be included for the development of erosion rate data in areas where they are currently lacking and to update maps after storms which induce erosion.

5. *Assisting And Monitoring Local Communities.*—One of FEMA's most successful programs will soon enter its fourth year: the Community Assistance Program (CAP). Currently funded at $3.2 million for fiscal year 1990, this modest program has great potential. It allows FEMA to supplement its meager staff through cooperative agreements with states to assist local communities with adoption and administration of local floodplain management programs, and to monitor their performance and compliance. We are seeking expansion of CAP to include funding for state activities to assist communities in undertaking new mitigation programs and in qualifying for participation in the Community Rating System (CRS). The CRS, a new FEMA initiative that the ASFPM strongly supports, is undergoing field testing at this time. It will encourage proactive local floodplain management efforts that exceed the Federal minimum standards. Reduced flood insurance premiums will be available to property owners in participating communities. The cost savings in future damages avoided are expected to be substantial. We strongly recommend an increase of $1 million for the Community Assistance Program to assure needed technical assistance to local communities to meet the Community Rating System objectives.

6. *Repetitive Losses.*—One of the most perplexing problems in floodplain management is the damage-rebuild-damage cycle, also referred to as the repetitive loss situation. A relatively small number of structures represent a large number of repeat claims against the National Flood Insurance Fund. New initiatives are needed to mitigate these losses. This is truly the classic situation where spending now will result in significant savings later. Last year's amendments to the Disaster Relief Act of 1974 (Stafford Act) and changes to the Small Business Administration's procedures will help put mitigation money in the hands of victims. FEMA must have adequate training funds to assure the availability of mitigation people and materials in Disaster Assistance Centers so that disaster victims are provided the technical assistance and information they need to avoid recurrent damages.

7. *Insurance Agent Training.*—Representatives from the Insurance community often testify that flood insurance is complicated and difficult to properly and accurately write. Only through adequate training can insurance agents be expected to understand the standard policy and rules in order to properly rate structures. The Federal Insurance Administration has begun to examine training activities within the Write-Your-Own Program. It is recognized that some shortcomings exist and that initiatives to encourage improvements must be developed. While successful in many ways, the WYO has resulted in reductions in assistance available for independent agents. An examination of FIA's servicing contractor activities in this area must conclude that current efforts are inadequate. Additional funds must be available to expand assistance opportunities for independent insurance agents not associated with the WYO.

8. *Hazard Mitigation Assistance Grants.*—Hazard Mitigation Assistance grants are another effective approach for accomplishing state and community-level mitigation. These grants, cost-shared by the states, can be used for a variety of mitigation efforts, ranging from development of site-specific non-structural implementation plans to state or community program development. This program annually receives requests that exceed its tiny nationwide budget of $200,000. Since most projects are on the order of $5–$15,000, an increase of $100,000 would result in a significant number of mitigation projects.

Successful flood damage reduction in the United States requires consistent and coordinated efforts from all levels of government as well as the private sector. The Association of State Floodplain Managers believes that FEMA and FIA have accomplished a great deal by pursuing these partnerships. The job is far from complete. We pledge our support to the continued pursuit of flood loss prevention and mitigation programs.

Questions and comments on this testimony should be directed to Rebecca Q. Hughes, ASFPM State Director (Region III), at (202) 858–8041 x3825, or Larry Larson, ASFPM Executive Director, at (608) 266–1926.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

STATEMENT OF JACK WOMACK, VICE PRESIDENT FOR LEGISLATION, PUBLIC HOUSING AUTHORITIES DIRECTORS ASSOCIATION

Senator **FOWLER**. Mr. Jack Womack of the Public Housing Authorities Directors Association.

Mr. **WOMACK**. Thank you, Mr. Chairman.

I am also the executive of the Oklahoma City Housing Authority.

PHADA, the Public Housing Authorities Directors Association, is an organization that represents over 1,000 executive directors in public housing in all 50 States of the Union, and we have developed an appropriations agenda for fiscal year 1990 which we will submit for the record.

Because of the limited time, we will mention most of our figures only in passing hopefully for your later consideration.

One overriding factor that we had in developing our figures was a recognition on our part of the monumental task that the committee will have in funding so many worthwhile programs with the limited resources.

Now, I said one overriding factor. In reality there are two. The second factor that we've worked with is some $80 to $85 billion invested nationwide of public funds invested in the Nation's public housing stock. Those are your funds and my funds as well, and the sheer magnitude of that investment seems to demand that it be maintained for the purpose it was intended, providing housing for a measure of the low-income people of our various communities.

Under this umbrella of maintaining the existing public housing stock are two essential elements that have been covered here this morning, operating subsidy and modernization. These are absolute must items. They are tied directly to our ability to provide safe, decent, and sanitary housing for our residents in a professional manner.

HUD has requested $1.83 billion nationwide in fiscal year 1990 to cover normal operating subsidy. Nervously, we will accept that figure, but I would respectfully remind the committee that for the past 2 years we have been funded at less than 100 percent of subsidy because of HUD's low needs estimates.

Senator **FOWLER**. What was it last year? What was the actual funding?

Mr. WOMACK. About $1.6 billion.

Senator FOWLER. And they are going up from $1.6 to $1.8 billion?

Mr. WOMACK. Inflation, yes, sir, is all that they're putting to it, and $1.6 billion underfunds it. So that's why we're nervous about it.

The ABT modernization needs study directed by Congress and conducted by HUD at a cost of $4.5 million identified a need of some $21 billion to fully meet the renovation backlog needs of the Nation's public and Indian housing stock. We support the need for the $2.5 billion in funds for fiscal year 1990 to address a portion of those needs.

Money spent here to combat the drug problem does not address the modernization needs and should be additive.

In addition, we suggest the funding of $1 billion to begin a system of future capitalization for capital improvements for public housing to be distributed to Public Housing Authorities on a set and predictable formula as envisioned in the 1987 Housing Act.

Very quickly, we recommend: $1.3 billion for lead-based paint testing and abatement; a minimum of $680 million refund expiring section 8 units for 5 years, plus an allowance for an 8.3-percent administrative fee; construction of 20,000 new units of public housing at $1.4 billion; and modernization rehab of 10,000 section 8 units at $1.25 billion.

Sir, we thank you for allowing us to be with you today, and we appreciate it.

Senator FOWLER. Who is doing the testing? Who actually does the testing for the lead?

Mr. WOMACK. The testing right now, if you remember, Congress asked HUD to put a hold on their new regulation and laid it on the Public Housing Authority to do the testing. The testing that was required was flawed. It was not based on the technical data, and that went back to be rewritten. So far it has not come out. HUD did contract with the NIBS, the National Institute of Building Sciences, to come up with a program on that.

Senator FOWLER. It's not being done at all now, is it?

Mr. WOMACK. Not in any great amount, and those people who are doing it have taken it on their own to do it. There is no set way of testing, and that's the problem. It could cause more problems by testing and abating and creating more than exists now. It could be creating a worse problem than what you're living with.

Senator FOWLER. If you got $1.3 billion for testing, what would you do?

Mr. WOMACK. I don't think anyone knows yet. Our figures are based on what the former counsel, Mr. Dorsey, had at HUD of $15,000 per unit. Until the study is completed and published, I don't think we really know what the figure is going to be. Our figures are based on what Mr. Dorsey came up with as counsel at HUD. But I don't think anybody really knows yet. We know it's going to be expensive.

Senator FOWLER. Well, thank you, Mr. Womack, and thank you for your public service. I don't know of anybody more on the front lines of public life today than the Public Housing Directors.

Thank you, sir.

[The statement follows:]

STATEMENT OF JACK WOMACK

Senator Mikulski and Members of the Committee:

My name is Jack Womack, and I am the director of the Oklahoma City, OK Housing Authority. I am also Vice-President for Legislation of the Public Housing Authorities Directors Association, an organization representing over 1000 professional public housing directors from all 50 states.

PHADA has developed an appropriations agenda for FY-90 which we will submit for the record. Because of limited time, we'll mention most of our figures in passing, we hope for your later consideration. Nevertheless, during the preparation of that document, one overriding factor was the recognition on our part of the monumental task you face in attempting to fund so many worthwhile programs within the limited resources available.

I mentioned one overriding factor. In reality, there are two. This second factor involves the $80-$85 billion dollars in public funds currently invested in the nation's public housing stock...your funds...my funds. The sheer magnitude of that investment seems to demand that it be maintianed for the purpose for which it was intended...providing housing for a measure of the low-income people of our various communities.

Under this umbrella of maintaining the existing public housing stock are two essential elements, operating subsidy and modernization funding. These are absolute "must" items, and are tied directly to our ability to provide safe, decent, and sanitary housing for our residents in a professional and effective manner. I only wish time was available to discuss these two items in detail.

HUD has requested $1.83 billion for FY-90 to cover normal operating subsidy. Nervously, we will accept that figure...but we respectfully remind the committee that, for the past two years, we have been funded at less than 100% of subsidy because of HUD's low need estimate.

The Abt modernization needs study, directed by Congress, and conducted by HUD at a cost of $4.5 million, identified a need of some $21 billion to fully meet the renovation backlog needs of the nation's public and Indian housing stock. We support the request for $2.5 billion in FY-90 to address a portion of the modernization needs identified in the study. Money spent here to combat the drug problem does not address the modernization needs, and should be additive. In addition, we suggest the funding of $1.0 billion to begin a system of future capital improvements for public housing to be distributed to public housing authorities on a set and predictable formula, as envisioned in the 1987 Housing Act.

Very quickly, PHADA recommends for your consideration in FY-90:

-Up to $1.3 billion for lead-based paint testing and abatement

-A minimum of $680 million to renew expiring 5 year Section 8 certificates, plus allowance for an 8.3% administrative fee for all rental assistance units under the Annual Contributions Contract.

-Construction of 20,000 new units of public housing at $1.4 billion. At the very least, this program should be kept alive.

-modernization rehabilitation of 10,000 Section 8 units at $1.25 billion.

Again, we do thank you for allowing us to be with you today. We would welcome the opportunity to respond at any time.

1989 SUPPLEMENTAL AND FISCAL YEAR 1990
APPROPRIATIONS AGENDA

DRUGS: THE NEMESIS OF PHAs

One of the problems most threatening to PHAs is the massive drug epidemic which is currently rampant in the nation. Correspondingly, illegal drug activity in PHAs is a prime contributor to the perpetuation of the national drug crisis. It is therefore obvious that all anti-drug initiatives taken on the Federal level must, if they are to be effective, include major components specifically geared toward Public Housing.

PHAs have long struggled with the dilemma of trying to provide decent, safe and sanitary housing in an environment which is plagued with the scourge of drugs; and they have done so without the amount of Federal support needed to wage a successful war on drugs. PHADA believes that it is only through an effort which coalesces federal, state and local agencies; tenant groups, and senior citizens groups, that a successful anti-drug program can be developed, which adequately addresses the gravity of the problem.

RECOMMENDED LEGISLATIVE ACTION:

- Appropriate $34 million in 1989 supplemental budget to implement the Cranston Drug Treatment Program.
- Appropriate $8.2 million in 1989 suplemental budget to implement the Lautenberg Public Housing Drug Elimination Pilot Program.
- Appropriate $50 million to permit PHAs to hire investigators to compile evidence on illegal drug use and trafficking for use in eviction efforts.

HOMELESSNESS

Clearly, one of the most serious issues which presently confronts our nation is that of homelessness; for it has become universal in the breadth of it's impact. Homelessness exists to varying degrees in every region, every state and every city, and affects people from all walks of life. Evidence of the universality of this tragic situation, is the large numbers of families that can now be seen on the streets of America, where there once were only a few older men.

PHADA believes that in addition to the full funding of the emergency measures which have been enacted to address the immediate problem of people on the streets, increased funding for rehabilitation of public and assisted housing for low income families is necessary to provide a suitable safety net for those most at risk, and a habitable alternative residence for those who have already succumb to homelessness.

RECOMMENDED LEGISLATIVE ACTION:

- Fully fund the relevant portions of the Stewart B. Mc Kinney Homeless Assistance Act:

Emergency Shelter Grants Program	$125.0 Million
Supportive Housing Demonstration Program	$105.0 Million
Supplemental Assistance for Facilities to Assist the Homeless	$ 11.0 Million
Section 8 Assistance for Single Room Occupancy Dwellings	$50.0 Million

- Public housing authorities are already in place to provide housing to those of low and moderate income. PHAs currently provide housing for more than 3.2 million families therefore, funding to help alleviate the homelessness crisis should be channeled directly to the PHAs.

MODERNIZATION

Critical to the goal of providing decent, safe and affordable housing for the over 4 million residents of public housing, is the maintenance of America's housing stock. The findings of the Abt Modernization Needs Study call for $18 to $21 billion to bring the nation's public housing stock up to current standards. PHADA supports the full funding of Public Housing modernization needs as delineated in the study. Moreover, PHADA firmly believes that the Congress should recognize that public housing modernization is a federal responsibility. As required by the 1987 Housing Act, Congress should insist that an equitable formula be devised for distribution of modernization funds, and that the formula should be included in FY-90 appropriation legislation.

LEGISLATIVE ACTION RECOMMENDED:

- The authorization and appropriation of $2.5 billion in FY-90 for modernization backlog needs.
- The authorization and appropriation of $1 billion for reserve contributions for future repair and replacement needs.
- The line item authorization and appropriation of $ 1.3 billion in FY-90, and each subsequent year through 1995 for lead based paint testing and abatement.

RENTAL HOUSING

PHADA believes that federal housing policy must be responsive to the seriousness of the problems associated with the severe shortage of affordable rental housing; if shelter is to be provided for those who, under current economic conditions, haven't the means to provide it for themselves.

PHADA supports all efforts to increase the production of affordable rental housing and to rehabilitate existing housing stock. It is imperative that the millions of families at risk are given an alternative to moving onto the streets.

LEGISLATIVE ACTION RECOMMENDED:

- The authorization and appropriation of $1.4 billion for new construction of public housing. (20,000 units)
- The authorization and appropriation of $1.25 billion for the rehabilitation of Section 8 units. (10,000 units)
- The inclusion of PHAs as eligible sponsors of Section 202 housing projects.

RENTAL ASSISTANCE

PHADA believes that the problems associated with the impending expiration of Section 8 certificates and vouchers under ACC to PHAs is of potentially disastrous proportions for the millions of families who use this very valuable program to augment their capacity to find suitable housing. As a necessary preventative measure, PHADA urges the Congress to provide the necessary resources to refund the program and replace each certificate and voucher under ACC upon its expiration.

PHADA is convinced that absent this preventative course of action, homelessness will rise exponentially to epidemic proportions in this country; a situation which is simply intolerable.

LEGISLATIVE ACTION RECOMMENDED:

- The authorization and appropriation of $680 million for the purpose of refunding five year certificates and vouchers which will expire in FY-90.

- The full funding of the 8.2 % administrative fee for all Rental assistance under ACC.
- The authorization and appropriation of adequate funds for 10,000 incremental Moderate Rehab units for FY-90.

NOTE: PHADA, through a Housing/Legislative Task Force, will study the merits of both the voucher and certificate programs and will extrapolate the best of both programs to determine if it might be worthwhile to incorporate the two programs, paying particular attention to implementation.

OPERATING SUBSIDIES

One of the most important tools in the effort to provide decent, safe, and sanitary housing is the operating subsidy. PHAs have come to rely heavily on this resource, as it augments their ability to provide badly needed services with professionalism and effectiveness. It is therefore, apparent that operating subsidies must be fully funded for PHAs to function without experiencing financial crises which inhibit their performance. **FULL FUNDING OF THE OPERATING SUBSIDY IS PHADA'S NUMBER ONE PRIORITY.**

LEGISLATIVE ACTION RECOMMENDED:

- The authorization and appropriation of $1.8 billion for operating subsidies in 1990.
- The authorization and appropriation of $23.9 million in supplemental appropriations to cover shortfalls in FY-88.
- The authorization and appropriation of $45 million in supplemental appropriations to cover shortfalls in FY-89
- The authorization and appropriation of $100 million for NAHRO/PHADA and the Committee on Fairness recapture issue.

STATEMENT OF DONALD ANDERSON, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION FOR THE SOUTHERN POOR

Senator FOWLER. Donald Lewis Anderson, National Association for the Southern Poor.

Are you Mr. Anderson?

Mr. ANDERSON. I think I am, sir. [Laughter.]

Mr. Chairman, I am the executive director of the National Association for the Southern Poor. I also was the general counsel for the subcommittee of the House that drafted the poverty legislation about 24 years ago.

I was in the room the day when Sargeant Shriver said that we, the Government, expected to eliminate poverty from the country in a generation. That was over 24 years ago, and the percentage of the poor, those below the poverty line remains about 14 percent, what it was 24 years ago.

So the elimination of poverty from a rich country is our problem. As you know, there are countries in the world having no poverty whatsoever. Germany has no poverty, except for their Turkish immigrants. The Scandinavian countries have no poverty. Switzerland, a country without any natural resources, has no poverty, or so little that they don't keep a record of it.

So this suggests that the elimination of poverty is something more than just having the will or the resources. I believe it's a matter of a special skill or knowledge and a technique. I think that over the last 20 years we have acquired some of that knowledge, but we just haven't taken it to its logical conclusions.

For instance, we know that you will not eliminate poverty merely by concentrating on a single aspect of poverty, as in the case of housing. Yet, that is the major activity in most antipoverty efforts in this country.

Our special experience is with self-help on the part of large numbers of people, and we have demonstrated that in several counties and cities in the black belt, in Virginia and North Carolina. As a matter of fact, we have seen the transformation of entire communities from desperate poverty by our techniques, and we ask for a line item appropriation to continue this work.

Senator FOWLER. Well, as you know, Mr. Anderson, I have visited many of the counties in which your organization had worked, and I think the record does speak for itself of the remarkable success with very little money in helping learn how to help themselves out of serious economic plight and into both private enterprise and political responsibility, and I commend you for your efforts.

We will certainly consider this request along with many others in time of very serious budget restraints.

Mr. ANDERSON. Thank you, Mr. Chairman.

Senator FOWLER. Keep up the good work.

[The statement follows:]

STATEMENT OF DONALD ANDERSON

Madame Chairman. My name is Donald Anderson. I am testifying on behalf of the National Association for the Southern Poor. I am also speaking out of an an extended experience with the problem of poverty, from 1951 when I worked on a project with the American Friends Service Committee in North Richmond, California, to 1966 when I served as General Counsel of the U.S. House of Representatives' Ad Hoc Subcommittee on the War on Poverty, to a twenty-one year experience with the National Association for the Southern Poor. Since so many problems of our society result from the problem of poverty, and since I know that our government is earnest in its efforts to deal with this colossal issue, an advance of any magnitude in this area is surely one of the transcendent objectives of the day. I was present when the anti-poverty effort was launched twenty-four years ago with the objective of ridding our country of poverty within a generation. Yet the percentage of the impoverished in the nation remains about the same as it was twenty years ago --- about 14%. Other countries without our resources have so organized their societies, that they can live without the affliction of poverty. Germany, except for its Turkish immigrants, has no poverty. The Scandinavian countries have none, and Switzerland, a country with few natural resources, has so little that it keeps no poverty statistics. One might conclude from the recitation of such facts that the elimination of poverty from a rich country, which is our problem, is not simply a matter of a will to do so, or the resources to do so, but a matter of a special knowledge of how to do so. That is my belief. Although there is some instinctive knowledge which may be helpful and to which we all have access, I believe the elimination of poverty requires an expertise, skill, a knowledge in a technique. Our experience of the last generation has added knowledge to many of us about the best techniques. I believe we have faltered where we have not taken the propositions we have learned to their logical conclusions, but where we have, we have been successful. I would like today to add the conclusions to the propositions to which we all generally agree.

I think, Madame, that we would all agree that poverty will not be ended by a hand-out, whether it be a grant of money or a program, and many of us know the Chinese proverb "Give a man a fish and you will always have to feed him, but teach a man to fish and he will learn to feed himself." There is a subtle distinction between help and self-help and a great consequence in not understanding the difference. Helping, though usually well-intentioned, creates a dependency on the giver, and destroys the initiative of those who receive. And although we understand this, many of our efforts in this field are the short-term process of giving. A problem presents itself, a gift is given, and the effort falters. The very opposite of what was intended occurs. And so the cycle repeats itself: a recognition of some single aspect of poverty, a bona fide effort to do something about it and the crippling gesture.

What we are concluding, and I think what our was conclusion from former anti-poverty efforts was the basic proposition that the most effective and successful programs were those devised by the poor themselves to deal with their own problems. They were successful because they dealt with the problems most urgent to the poor. And they have the added benefit of being less expensive: much of the activity is voluntary, undertaken by the poor because it is in their own self-interest to do so.

Yet it is this basic proposition which we have not taken to its logical conclusion. Self-help by individuals is not difficult to contemplate. It has been chronicled through our history. Lifting oneself from the depths of poverty is the American story. But self-help on the part of large numbers of people, on the part of whole communities is more difficult to achieve. This is the problem with which the Community Action Program of the Economic Opportunity Act sought to deal. In my view, this concept failed because the structures of organization were not sufficiently refined and extensive. For it follows logically that if you are talking about large numbers of people, you cannot talk about self-help without talking about organization --- for even large numbers of people require a means of coming to decisions about the problems that affect them. There is no means by which large numbers of people may come up with programs to deal with their concerns in the absence of organization.

I should like to say on our behalf, with all becoming modesty, it is in that area that our organization has made its greatest advance. It has developed a technique for effectively organizing large numbers of the poor to help themselves. It has brought transformation to entire communities by providing the poor with an enduring institution through which they can generate permanent change. And this was done through the voluntary action of the poor themselves.

The National Association for the Southern Poor is a non-profit organization which brings people together to solve their problems in a unique way. Founded in 1968, NASP's goal is to provide poor people with the tools and training they need to organize themselves into permanent action groups called Assemblies. So far it has helped poor people organize Assemblies in over 40 counties and in 4 cities of the South. Incorporated in North Carolina and headquartered in Durham, NASP's long range plan is to help people set up Assemblies in each of the 300 counties stretching from Virginia to Louisiana.

NASP works in communities where the population is 30% to 80% Black, and per capita income averages $4500 a year.
Yet, despite the odds, poor people here are proving that a lack of income doesn't mean a lack of resourcefulness. Through the Assemblies, they are identifying problems, making decisions and

ensuring that local government is responsive to their needs. They are governing themselves in a way that Thomas Jefferson urged over 160 years ago.

> "Among other improvements, I hope they will adopt the subdivision of our counties into wards. Each ward would thus be a small republic within itself and every man in the state would thus become an active member of the common government ..."
>
> Thomas Jefferson, June 5, 1821

Helping people participate in their government in the way Thomas Jefferson envisioned is the role of the National Association for the Southern Poor. The vehicle is the Assembly.

Surry County, Virginia, just across from Williamsburg, is an example of the transformation of an entire county from desperate poverty to mainstream, to, in fact, a model county, by the use of this technique.

Eighteen years ago, whites abandoned the public school system after integration. The educational system was allowed to decline. Salaries were low, and the plant was allowed to deteriorate. When it rained, it poured into the school buildings. The president of the Parent Teachers' Association was not permitted to speak at school board meetings. When parents went to the school, they were ordered away by the principal of the school.

There was very little employment in the county for blacks. There were no medical facilities and one doctor for the county. For blacks, there were no recreational facilities. Much of the housing was tin roofed shacks. Blacks could not get loans at the local bank. Though eligible, they were routinely turned away when applying for medicaid or welfare. No food stamps had been issued.

During this period, the blacks boycotted the school for eighteen days. There was talk of violence. But the leadership of Surry decided on another course of action. In 1970, they established the Assembly of Surry. That led to a transformation.

Today's statistics are a far cry from those eighteen years ago. And the mood of the people has been transformed. Eighteen years ago, the people would say "Nothing's ever going to happen in this county." But soon after the Assembly was established, food stamps were issued by the Welfare Department, and those eligible for welfare began to receive it. New housing was constructed with the aid of the FHA loans, and the Assembly winterized 300 existing homes. The bank was induced to make loans to black residents, and many blacks were hired in local businesses, the President of the Assembly, Mr. Thomas Hardy, raised $500,000 from the Robert Johnson Foundation to bring three doctors and 12 other medical specialists into the county, but since the Johnson Foundation does not give money for a physical facility, he raised another $500,000 for a health clinic. Soon a $450,000 recreational facility was established.

The proudest achievement of the people of Surry is their educational system. The first act of the new county government was to build a $4.6 million high school, followed shortly by a million dollar elementary school.

The teaching staff was integrated and upgraded. The faculty/student ratio improved from 45/1 to 17/1. SRA scores soared, from 12th percentile to 50th percentile, and those going on to college rose from 37% to 62%. The dropout rate fell from 14% to 3%. A supervisor of the school system said, "There is no turnover among the teaching staff. You couldn't get them to leave. We've seen nothing like this. Walking through this school is like stepping through a fairyland." Most people agree with the sentiments of Mr. Edward Johns of the county government: "We may not be able to find our youth jobs in the county, but this generation is saved. When they leave this county, they'll enter the mainstream."

There is no drug problem in the county. According to the county prosecutor, the first black and first woman

Commonwealth's Attorney in the state, there have been only 6 robberies in ten years, and no overnight incarceration of a youth during that period. Because of the low crime rate, the jail has been closed.

I think that success such as this should be extended to deal with a basic problem of this country. For this reason we are requesting funding for this concept on a modest level through a line item appropriation on legislation pending before you.

STATEMENT OF ROBERT HEARN, COMMISSIONER, DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT, ON BEHALF OF THE NATIONAL ASSOCIATION OF HOUSING AND REDEVELOPMENT OFFICIALS

Senator **Fowler**. Mr. Robert Hearn of the National Association of Housing and Redevelopment Officials.

Mr. **Hearn**. Thank you, Senator.

I am also the commissioner of housing for the city of Baltimore, as well as the executive director of its housing authority. I am here on behalf of the National Association of Housing and Redevelopment Officials.

We have submitted longer testimony for the record. So I will keep within the time allotted.

We see an obvious need to increase the production of public housing because it's one of the few sources of permanently affordable low-income rental housing in this country.

Therefore, NAHRO suggests a 20,000-unit production acquisition program for fiscal year 1990 at an estimated cost of about $1.4 billion to meet the needs, or to begin to meet the needs of roughly 840,000 households currently on Public Housing Authority waiting lists throughout the country.

Now we have heard testimony about the need for a continuing increase in modernization funding, and we see the need for a minimum of funding at around $3.5 billion. I believe the current budget figure is about $1.7 billion. Earlier testimony referred to the study indicating a $21 billion backlog on modernization, and we think that this minimum will give us a head start toward a 10-year program to begin to deal with this particular issue.

We also see the need to continue our efforts with respect to privately owned publicly subsidized housing because obviously it, too, is a major source of affordable housing. Beyond replacing the 23,000 section 8 contracts due to expire in 1990, we urge you to provide a level of funding sufficient to support some of the incentives authorized in the 1987 Housing and Community Development Act. Incentives are clearly needed to encourage owners of these projects to maintain them for low and moderate-income households.

We also recommend the restoration of the section 312 Rehabilitation Loan Program.

I see the light. Does that mean I'm out of time?

Senator **Fowler**. Yes. [Laughter.]

You've got to learn to talk fast in this business. [Laughter.]

Mr. **Hearn**. Actually I had rehearsed 3 minutes. [Laughter.]

Senator **Fowler**. I'll give you 1 more minute to wind up.

Mr. **Hearn**. I'll wrap up with just something about the Community Development Block Program. We would like to see that funded at the $4 billion level. I think it's currently around $3 billion. That program is obviously important to meet the needs of displacement and relocation requirements in the 1987 act as well.

Thanks for the opportunity to make those few brief comments.

Senator **Fowler**. Thank you, Mr. Hearn, and thank you for understanding our constraints.

[The statement follows:]

STATEMENT OF DR. ROBERT HEARN

Madam Chair, we in the housing and community development field, are delighted to call you "Madam Chair" in your new role shepherding this Subcommittee. And we in Maryland are particularly proud that our native daughter has achieved the seniority and assumed the responsibility for this critically important Subcommittee which funds so many important domestic programs.

You have already demonstrated your commitment to assuring a level playing field for housing and community development programs which must compete for funds within the Subcommittee. Your past efforts in the Subcommittee to fund UDAG, Nehemiah, and assisted housing for low income Americans are well known to us. We thank you for leading the charge in the past and know we can count on you to continue leading that charge on behalf of America's cities and towns and those citizens least able to fend for themselves.

We are on the same wavelength when it comes to the need to provide some minimal level of support to add to the supply of public housing as the only permanently affordable low income rental housing. There simply is no substitute for adding to the supply of affordable housing in the face of skyrocketing demand and declining numbers and affordability of housing in the private rental market.

NAHRO is suggesting a 20,000 unit production/acquisition program for FY'90 at an estimated cost of $1.4 billion. As you know, the past eight years have been ones of neglect and deliberate killing of safety net programs for low and moderate income Americans. There are 840,000 households currently on public housing waiting lists across our country. May PHAs have closed their waiting lists to new applicants so as not to hold out false hope that a decent, affordable place to live might materialize in the foreseeable future.

Last year, Congress funded only 19,000 net new additions of low income public housing, Sec. 202 elderly, and Sec. 8 moderate rehabilitation units to the national housing stock. In 1980, this production level was at 150,000 units. The public housing program has been confined to a replacement program of 5000 units each year for demolished, and sold units. There has been no net increase.

We must attend to the public housing stock of which we are the trustees. There are 4 million persons currently residing in 1.4 million units of public housing. An estimated 27,000 units are vacant and have no commitment of modernization monies. These are older buildings, 30 and 40 years old, in need of major replacements of roofs, boilers, windows, mechanical and plumbing systems.

The vacant units pose a threat to the rest of the neighborhood by presenting opportunities for crime and vandalism. Yet the Bush budget proposes a $700 million reduction from last year in this effort! HUD has documented a $21 billion backlog of public housing modernization needs along with an estimated $1 billion per year need for on-going repair and replacement needs. Shortchanging this effort now will only worsen the problem. NAHRO suggests $3.5 billion is needed to begin to work of that backlog and head off future ones. And we would like to work with the Subcommittee to free up the $3 billion in the HUD pipeline which our member agencies are ready and willing to put to work.

Increasingly, local housing authorities and community development agencies are confronted with new federal mandates - such as testing for and abating lead paint; fighting the war on drugs; and providing more generous and long-term relocation and housing benefits to public displacees - without the attendant federal resources with which to do the job. We ask this Subcommittee to recognize these special mandates and provide specific line item appropriations to carry them out.

Specifically, we ask that the Lautenberg Public Housing Drug Elimination Pilot Program authorized in the 1988 Omnibus Drug Law be funded at $50 million; that the lead paint requirements of the '87 Housing and Community Development Act be funded at $1.3 billion in each of the next five years; and that the the Community Development Block Grant program be funded at $4 billion in part to meet the new displacement and relocation requirements of that same law, as well as cover the newly eligible activities of housing rehab, 911 Emergency Telephone Systems, and public housing child care grants.

We believe a mix of tenant-based and project-based assistance through the Section 8 program is needed to meet the differing and unique needs of local housing markets. A tenant with a Section 8 voucher in a tight housing market such as New York, Boston, Washington, or San Francisco is simply not going to find a place to live because of the limited supply. NAHRO recommends 10,000 units of Sec. 8 Moderate Rehabilitation; 65,000 units of Sec. 8 assistance to be allocated to low income tenants and buildings at the discretion of local officials; and 10,000 project-based contracts to assist senior citizens, frail elderly, and mentally disabled adults to live in Sec. 202 buildings.

An important workhorse of a housing program had the legs cut out from under it in the current fiscal year, Madam Chair. That is the Sec. 312 Rehabilitation Loan Program. This self-supporting program has been providing below-market-rate home improvement loans to seniors, urban homesteaders, and neighborhood retail commercial building owners to maintain their homes and stablize neighborhoods.

The Fund had virtually all of its funds ($200 million) diverted this year to help shore up Community Development Block Grants. We think this was a mistake and we ask that the full $200 million be restored by this Subcommittee in Fiscal 1990.

The Rental Rehabilitation program, coupled with the housing voucher program, is an effective tool in stabilizing neighborhoods. It has preserved more than 70,000 housing units - mostly in small multifamily properties - during the past five years. We urge its continuation at a minimum funding level of $200 million.

Finally, Madam Chair, Fiscal Year 1990 will begin to see the tip of the iceberg of expiring assistance contracts from the Section 8 program entered into 15 years ago. I understand that the FY 90 Budget Resolution provides $1.1 billion to renew for five years an estimated 23,600 certificates and vouchers on an in-kind basis. We urge the Subcommittee to include the funds necessary to continue this rental assistance to low income Americans and to forestall further displacement and homelessness. And we urge that any excess contract renewal funds from that $1.1 billion be devoted to net new Section 8 assisted housing.

Thank you for the opportunity to appear here today, Madam Chair. NAHRO will continue to work closely with you and your able staff on reporting a fair, responsible, and reasonable appropriations bill for the two Cabinet Departments and 15 independent agencies under your Subcommittee's jurisdiction.

Senator FOWLER. I thank all of you on the panel very much.

Will panel 6 come forward?

[Show of hands.]

Mr. Charles L. Richardson, National Environmental Training Association.

Welcome, Mr. Richardson.

ENVIRONMENTAL PROTECTION AGENCY

STATEMENT OF CHARLES L. RICHARDSON, NATIONAL ENVIRONMENTAL TRAINING ASSOCIATION

Mr. RICHARDSON. Thank you, Senator.

My testimony is presented on behalf of the National Environmental Training Association to support the current congressional commitment to the development of a competent national environmental work force.

Over the past several years Congress has listened to, accepted, and acted upon our recommendations to support environmental training at the Federal and State level. Significant progress has been made at the Federal and State levels, and the understanding of training is a cost-effective compliance and management tool.

As a result, the institutionalization of training has begun at the State level through your funding of planning and technical assistance projects in wastewater and RCRA compliance.

In the wastewater operator training and technical assistance area following the development of State training action plans based on what we are calling an integrated compliance strategy, the pilot 104(g) technical assistance project has brought almost 3,000 plants into compliance over the past 6 years.

In 1987, you recognized the impact of this wastewater project on compliance and funded EPA for a similar project directed toward RCRA implementation and compliance. EPA responded to your mandate and invested $200,000 of its own budget funds into what is called a RCRA integrated and technical assistance initiative, or RITTA.

A comprehensive national survey that was conducted first of the RCRA training needs among State regulatory personnel and the regulated work force. This survey highlighted the fact that local training resources were very limited, underutilized and rarely coordinated to meet the training needs.

In most States, training lacks a compliance related identity and a State commitment of personnel and budgets. Technical assistance is primarily ad hoc and undocumented rather than part of a planned program directed toward RCRA implementation.

The hazardous materials work force is, with very few exceptions, not regulated by certification or any personnel competency assessment standards. To start the training process under an integrated compliance strategy, 11 EPA grants were awarded to 10 individual States and one regional consortium in order to, among other things, develop a State training action plan and to develop and implement waste minimalization demonstration programs.

Your commitment has set a precedent and placed a priority on training the American work force in environmental protection. EPA has followed your lead and provided additional funding for 104(g) and the RITTA project.

It's significant to note, however, that the use of training technical assistance to achieve compliance in these particular areas has been so successful that EPA has proposed an integrated compliance strategy initiative for the drinking water program as well.

RECOMMENDATIONS

Our recommendations are: First, a legislative mandate to implement the integrated compliance strategy in all environmental disciplines. This is in order for EPA to effectively implement the strategy. They need this legislative mandate.

Second, institutionalized training through the Office of Cooperative Environmental Management, OCEM, in EPA. Your direction to the agency to continue and intensify the institutionalization of training can strengthen this fledgling office and withstand the changes of a new administration.

Third, encourage the development of agency and national environmental training action plans as part of an integrated compliance strategy.

Fourth, continue the funding of compliance training and technical assistance at least at the fiscal year 1990 level. Also, support the EPA proposal to provide funds for training and technical assistance for compliance in the drinking water program by making these funds available on a competitive basis in order to foster the institutionalization of training and technical assistance capabilities at the local level.

Senator FOWLER. That's a good idea.

Mr. RICHARDSON. Fifth, encourage the establishment of competency assurance programs, and finally, support environmental academic education and special studies by allocating funds for academic education fellowships and special study programs such as the existing national network for environmental management studies.

Senator FOWLER. Very good. Thank you, Mr. Richardson, very much.

[The statement follows:]

STATEMENT OF CHARLES L. RICHARDSON

NATIONAL ENVIRONMENTAL TRAINING ASSOCIATION

Concerning Programs of the U.S. ENVIRONMENTAL PROTECTION AGENCY

INTRODUCTION

This testimony is presented on behalf of the National Environmental Training Association (NETA) to support current congressional commitment to the development of a competent national environmental workforce. This testimony summarizes the current status of training capabilities (including an overview of what has been accomplished with previous Federal appropriations) and presents recommendations for program direction.

NETA is a not-for-profit association of professional environmental trainers and is supported primarily by member dues, grants, publications and training activities. An environmental trainer provides vocational instruction, technical assistance, or employee training in environmental control and regulations. Environmental trainers are employed by educational institutions (universities, community colleges and state training centers), local/state/federal government, private sector industry and consulting firms.

Over the past several years, Congress has listened to, accepted and acted upon our recommendations to support environmental training at the federal and state level. Significant progress has been made at both levels in the understanding of training as a cost-effective compliance and management tool. States have demonstrated interest and responsibility toward developing comprehensive plans to train a competent state workforce, which will maintain the level of environmental control mandated by the Federal government. The institutionalization of training has begun at the state level through your funding of planning and technical assistance projects in Wastewater and RCRA compliance. U.S. EPA has followed your lead with the development of the Office of Technology Transfer and Training, and has committed people and additional funding for the technical assistance projects you initiated. The RCRA Integrated Training and Technical Assistance (RITTA) initiative, which you mandated and funded last year, is presently one of EPA's top five initiatives.

Traditionally, states mirror the Federal agency in this area. We can expect, and have already seen, a ripple effect in state agency attention and commitment to technology transfer and its ability to arm states to protect their environment.

WASTEWATER OPERATOR TRAINING AND TECHNICAL ASSISTANCE

Congress has invested several million dollars over the last five years for a two-pronged approach toward training personnel at publicly owned wastewater treatment plants. First, the pilot 104g technical assistance project has brought hundreds of plants into compliance with NPDES permits and the Clean Water Act. Moreover, the planning arm has reached all states with a Model Training Action Plan and a national newsletter reporting progress and encouraging long range state agency planning for self-sufficient and compliance-oriented operator training.

The model plan approach establishes state agency financial and programmatic responsibility for the training program. The model program is based upon an Integrated Compliance Strategy (ICS), which establishes training as a critical element of a coordinated system for ensuring environmental compliance.

Beginning with three "model" and ten "demonstration" states, the project eventually reached thirty-three states with direct planning assistance. Ten states are currently implementing STAPs and ten more have written STAPs which need to be finalized and adopted. The project leaves a legacy of vastly improved, comprehensive training programs for wastewater treatment plant operators. A training program model was developed, field tested, and used by state agencies nationwide. Training advisory committees organized during the project continue to guide programs to meet operator needs. State Integrated Compliance Strategies were activated which include training in agency responses to non-compliance.

The project provided no funding to state governments to develop plans. The planning effort was slowed in many cases by the shortage and rapid turnover of training personnel in state agencies. Those states which were able to muster the man-hours and commitment to write STAPs to direct programatically and fiscally sound programs have reaped rich rewards. Training has been firmly established and budgeted in state environmental control agencies. Legislation has guaranteed program funding continuity. Inter- and intra-agency communication has greatly improved.

The raised consciousness, knowledge and models provided by the project will continue to grow and bear interest far into the future. NETA continues to assist state agencies with environmental training planning through the **COMPASS Directions** newsletter and consulting services.

RCRA INTEGRATED TRAINING AND TECHNICAL ASSISTANCE INITIATIVE

You recognized the impact of the wastewater project on compliance and funded EPA to conduct a similar project directed toward RCRA implementation and compliance. EPA responded to your mandate and invested $200,000 of the agency's own budget in the RCRA Integrated and Technical Assistance (RITTA)initiative.

Under RITTA, NETA conducted a comprehensive national survey of RCRA training needs among State agency regulatory personnel and the regulated workforce and statewide training capabilities to meet those needs. With responses from all 50 states, the results document a tremendous need for training for both state regulatory staff and the regulated community. States rely heavily on U.S.EPA's vital role in RCRA training. EPA courses and documents were reported to be the basic source of training, particularly for state regulatory personnel.

Training is also provided in most states by state environmental protection agency personnel, educational institutions, and the private sector. However, local training resources are limited, under-utilized, and rarely coordinated to meet training needs. There is also a serious lack of commitment in most state agencies of personnel to plan and manage a RCRA training program for either regulatory personnel or the regulated community workforce.

A few states include training and technical assistance in their compliance strategies. In most states training lacks a compliance-related identity and state commitment of personnel and budgets. Technical assistance is primarily ad hoc and undocumented rather than part of a planned program directed toward RCRA implementation.

The hazardous materials workforce is, with few exceptions, not regulated by certification or any personnel competency assessment standards. A few states have limited certification for some workers or recognize existing certification, but no concentrated, concerted effort has been developed in any state.

The evaluation highlights the need for state focus on human resource development for RCRA compliance and calls attention to the vital role and impact that training can have when incorporated into the total implementation program.

Thirty four states submitted formal applications to EPA and eleven grants were awarded to ten individual states and one regional consortium of 4 northwestern states to:

1. Develop a five year RCRA State Training Action Plan (STAP),
2. Develop and implement an integrated and institutionalized RCRA training program as called for in the STAP; and
3. Develop and implement a Waste-minimization program as a demonstration training and technical assistance pilot project for the industrial/regulated community.

States responded with energy and enthusiasm to the RITTA project. The activity generated by the project underscores the states' ability and willingness to commit resources and personnel to develop the coordinating mechanisms requisite to a comprehensive approach to RCRA implementation.

Although it is still early in the process, the states are making substantial progress. Each has begun to develop capabilities and mechanisms to provide technical assistance and training in waste minimization techniques and technology exchanges. Cross fertilization is occurring between agencies and organizations in a given state as well as between states. Planning personnel have been hired, identified, and oriented. Each state has organized an active training advisory committee and established the communication process among state RCRA personnel, training and technical assistance providers and regulated community representatives necessary to produce an effective, working STAP. The groundwork has been laid for comprehensive RCRA implementation in every state.

Your committee has set a precedent and placed a priority on training the American workforce in environmental protection. EPA followed your lead and provided additional funding for 104g and the RITTA project. Because of your efforts and those of the environmental training profession, EPA in 1988 established the Office of Technical Transfer and Training, now the Office of Cooperative Environmental Management (OCEM).

RECOMMENDATIONS

The National Environmental Training Association looks to your committee for continued leadership and support in maintaining the momentum and direction begun in improving environmental training. We respectfully recommend action in the following areas.

LEGISLATIVE MANDATE TO IMPLEMENT THE INTEGRATED COMPLIANCE STRATEGY IN ALL ENVIRONMENTAL DISCIPLINES

The Model State Training Action Plan, Elements of Quality Training, integrated compliance strategy, and two-pronged approach to state agency planning for environmental compliance are a prototype approach and provide planning criterion for all environmental personnel training.

In order for EPA to most effectively implement the Integrated Compliance Strategy, the agency needs a legislative mandate directing EPA to implement the Integrated Compliance Strategy in all environmental disciplines.

INSTITUTIONALIZE TRAINING THROUGH THE OFFICE OF ENVIRONMENTAL MANAGEMENT

The previous EPA Administrator accepted and supported the recommendations of his Task Force on Technology Transfer and Training and instituted the new Office of Cooperative Environmental Management (OCEM), previously the Office of Technology Transfer and Training. We support EPA's new office, new understanding of the training role in compliance and new direction. We also recognize that training is an investment in the future, but lacks the visibility and quick reaction to capture management and public appreciation.

Your direction to the Agency to continue and to intensify the institutionalization of training through OCEM can strengthen the fledgling Office and its mission to withstand the changes of a new administration. It needs time and your support to develop resources and plans to systematically weave training for compliance into each environmental discipline.

DEVELOP AGENCY AND NATIONAL ENVIRONMENTAL TRAINING ACTION PLANS

The significance and the success of the planning process at the state level underscores the need for environmental training action plans for each of the appropriate federal agencies, EPA, OSHA, etc. These agency plans subsequently should be organized into a national environmental training action plan which identifies training needs and outlines a process for securing and focusing training resources to address the priorities.

CONTINUE FUNDING COMPLIANCE TRAINING AND TECHNICAL ASSISTANCE

Continue funding for the 104g training and technical assistance initiative emphasizing investment of state and local resources and the institutionalizing of local training and technical assistance capabilities.

Support the EPA proposal to provide funds for training and technical assistance for compliance in the drinking water program, making funds available on a competative basis in order to foster the institutionalizing of training and technical assistance capabilities at the local level.

The overwhelming acceptance for and success of the RITTA initiative warrents expanding the project to include additional states.

ENCOURAGE ESTABLISHMENT OF COMPETENCY ASSURANCE PROGRAMS

EPA has recognized the need for a competency assurance program for State and Federal regulatory personnel. Modular training courses and manuals have been developed for personnel to complete a general course and a specialized curriculum. We recommend that Congress support this effort and direct EPA to mandate state agencies to follow their lead by building training into grant requirements. Formalized competency assurance assessment programs such as certification should be encouraged.

SUPPORT ENVIRONMENTAL ACADEMIC EDUCATION AND SPECIAL STUDIES

Allocate funds for academic education fellowships and special study programs such as the National Network for Environmental Management Studies.

STATEMENT OF DR. RICHARD LUTHY, PROFESSOR, DEPARTMENT OF CIVIL ENGINEERING, CARNEGIE MELLON UNIVERSITY, ON BEHALF OF THE ASSOCIATION OF ENVIRONMENTAL ENGINEERING PROFESSORS

Senator **FOWLER**. Dr. Richard Luthy of the Association of Environmental Engineering Professors.

Dr. **LUTHY**. Thank you, Senator.

I am a professor of civil engineering at Carnegie Mellon University, but I am speaking in my capacity as past president of an Association of Professors in Environmental Engineering. We represent faculty at over 120 universities, faculty that are actively engaged in teaching and research in environmental engineering.

We express our concern that the EPA research budget is inadequate to address the long-term research needs of the EPA. The budget is also inadequate to help support the training of new environmental scientists and engineers.

Since the 1970's and continuing on into the 1980's, legislation and awareness of environmental problems has substantially increased the EPA's responsibilities. This occurs at a time when environmental problems facing society continue to expand in scope, magnitude, and complexity. Unfortunately, this also occurs at a time when too few scientists and engineers are being trained to enter the work place.

For both of these reasons we believe that the EPA must become more of a science and training agency, in addition to a regulatory agency. We urge that the EPA Office of Research and Development budget be substantially increased to support longer-term research while also providing resources for the development of new scientists and engineers to expand the pool of technical professionals.

We strongly recommend expansion of the budget of the Office of Exploratory Research to $50 million to support research in such areas as environmental engineering, chemistry and physics of environmental media, environmental biology and environmental risk. We recommend that this grant program be an individual investigator, peer reviewed research grants program.

This will have two advantages.

First, it will advance basic scientific information essential for the development of cost-effective solutions to environmental problems, and, second, it will help foster a diversity of cost effective solutions to environmental problems, and at the same time serve to train the professionals required to address our environmental needs.

In summary, I would say that last year there were no funds available in the exploratory research grants program, and we ask that this program be increased to $50 million annually to support on the order of 500 grants, and that would train about 750 graduate students. Currently, we are producing graduate students at a rate of less than one-third of the current demand.

Thank you.

Senator **FOWLER**. Thank you very, very much, Dr. Luthy.

[The statement follows:]

STATEMENT OF DR. RICHARD LUTHY

I am pleased to appear before your committee on behalf of the Association of Environmental Engineering Professors. We express concern that the budget for the Environmental Protection Agency's Office of Research and Development (ORD) is inadequate to address the longer term research and manpower needs of the Agency.

During the 1980's, major legislative changes have substantially increased the EPA's responsibilities, and at the same time the environmental problems facing society continue to multiply in scope, magnitude, and complexity. Long-term research is essential for identifying unforeseen problems, developing new knowledge about environmental protection needs and controls, and applying advances in science and engineering to cost-effective solutions for protecting the natural environment and safeguarding health. For these reasons:

The EPA must become more of a science agency in addition to a regulatory agency. The EPA ORD budget must be substantially increased to support longer-term research while also providing resources for the development of new scientists and engineers in order to expand the pool of technical professionals.

Too few environmental scientists and engineers possess the strong technical capabilities needed to address our environmental problems, and new scientists and engineers are not being trained quickly enough to keep up with demand. The importance of training scientists and engineers in the context of national environmental research and development efforts has been underscored by the EPA Science Advisory Board's report "Future Risk: Research Strategies for the 1990's". It was recognized that a most significant element of our national environmental research effort is the production of scientists and engineers, and the EPA must do more to increase the number and improve the quality of scientists and engineers devoted to environmental research. For these reasons we endorse initiatives to increase the budget of the Office of Exploratory Research for support of individual investigator peer-reviewed grants program. Two of the principal benefits to be derived from this type of program are:

The advancement of basic scientific information which is essential for the development of practical and cost-effective solutions to environmental problems.

The fostering of a diversity of scientific inquiry while at the same time serving to train the professionals required to address our environmental needs.

We suggest that our nation's environmental research and personnel needs may be satisfied in part by funding EPA's Exploratory Research Grants Program at $50 million annually for research in: environmental engineering, chemistry and physics for environmental media, environmental biology, and environmental risk. This funding will support on the order of 500 or more research projects involving more than 750 graduate students directly. The funds from this program could be leveraged to engage an even greater number of graduate students, with the final result that the current personnel shortages may be reduced substantially.

A vigorous investigator-initiated grants program is one of the best mechanisms to ensure creativity and innovation in environmental research while also training individuals to help satisfy manpower needs in the environmental professions.

STATEMENT OF JOE PALMER, NATIONAL RURAL WATER ASSOCIATION

Senator Fowler. Next we have a Georgian, finally. [Laughter.] Mr. Joe Palmer of the National Rural Water Association.

I also see the president of the Georgia Rural Water Association, Mr. Jimmy Matthews, from Barnsville with you here today.

Well, President Matthews. Glad to have you both.

Mr. Palmer. Thank you, Mr. Chairman.

My name is Joe Palmer, and I'm from Camilla, GA. So I have a vested interest in this rural water business because that's where I get my water, my drinking water. I am a member of the board of directors of the National Rural Water Association and a member of the executive committee of that organization. We also have with us Mr. Dennis Todd. We had to bring somebody from Maryland. So he is acting in the rural water business in Maryland and Delaware.

Senator Fowler. Good.

Mr. Palmer. But we are here to address the budget issues that we face. In fiscal year 1989, we were included in the EPA budget for $2.7 million which allowed us to establish and to operate in 36 States a training and technical assistance program for small water systems.

Now there is some 35,000 water systems in the United States, and just about two-thirds of those serve 500 people or less. These are the people that have the significant problems and they are going to become even more staggering with the new regulations that are mandated by the Safe Drinking Water Act. We don't take exception to the act, but we realize that these small rural systems are going to need a great deal of assistance.

We attempt to provide that assistance by conducting 1-day workshops in different locations around over each of the States that we're in during the course of the year, and we also have the program managers spend about one-half of this time on site with the small water system providing technical assistance on site.

We have no regulatory or enforcement function at all. However, we do work very, very closely with the State regulatory agencies in each of these States.

What we would like to ask at this time is that in the fiscal year 1990 budget that we be increased from $2.7 million to $3.9 million in order that we might get this program into all 50 States. The program in each State is organized and operated by the small water systems themselves. So they have direct input.

Because we have no regulatory enforcement function, they don't hesitate to call us when they have a problem. It doesn't mean that we work at odds with the regulatory agencies, not at all. We complement each other. But we both, in view of the staggering workload that is going to come about as a result of the Safe Drinking Water Act, these small systems need help far, far beyond what is available to them at the present time.

Senator FOWLER. Well, I can personally testify on that. The work that you and Mr. Matthews and his people at home, you do a great job of assisting these small water systems with good advice, it's cost effective and everything that we're trying to do with these limited resources.

Mr. PALMER. We need to be nationwide. That's our problem.

Senator FOWLER. I would like to see you be able to get into all 50 States with that good work.

Mr. PALMER. We appreciate the opportunity to be here and appreciate the time.

Senator FOWLER. Thank you so much, Mr. Palmer.

[The statement follows:]

STATEMENT OF JOE PALMER

Mr. Chairman, my name is Joe Palmer and I am a member of the Georgia Rural Water Association and on the Executive Committee of the National Rural Water Association (NRWA) Board of Directors. I am here on behalf of NRWA to thank you and this Committee for the support you gave the rural water training and technical assistance program last year and to request your continued support for the program in the Environmental Protection Agency FY 1990 budget.

This program has been the catalyst for bringing together small rural systems in Georgia. It has allowed the over 300 small systems that are members of the Georgia Rural Water Association to create a program that clearly meets the needs of rural Georgia. In particular, the program has turned around the effort in our state to bring small water systems into compliance with the Safe Drinking Water Act (SDWA). Through regular workshops in rural areas and follow-up hands-on technical assistance, every small system in the state now has the opportunity to improve the operation, management and, in some cases, the design of its water system. Last year, over 878 rural water operators and other personnel attended workshops and 115 systems received on-site visits in Georgia.

Our program is operating where the most serious rural environmental problems now occur in drinking water supplies. As a result of this problem, small rural systems are coming under rapidly increasing regulatory scrutiny. Last year, EPA initiated a program to list 83 new contaminants to be covered under the SDWA and published initial regulations on contaminant levels for lead in drinking water, coliform monitoring and expanded water filtration requirements. The major brunt of the cost to meet these regulations is placed on small water systems. In anticipation of this and in cooperation with EPA, our state training and technical assistance programs have expanded their efforts to inform rural systems of the changing federal requirements and are helping them prepare to comply with the new law. With on-site contact in every county in the state, EPA is assured of interaction with even the smallest water system in Georgia. In addition, we work closely with the Georgia Department of Environmental Quality which receives funding through EPA. We know that EPA and the Association of State Drinking Water Administrators have requested additional funding for the states' Safe Drinking Water Act programs and we strongly endorse this request. State drinking water administrators are our partners in working with small systems and they are facing a staggering additional workload.

Over the past few years, we have come to this Committee to request your support to continue this program. This year, the President's budget finally contains a request for some funding for the program. Our request to this Committee and to EPA is based on three points:

1. The vast majority of SDWA noncompliance problems are with small systems. Over 8,500 of those small systems are active members of state rural water associations who operate this program in each state.

2. A peer-oriented grassroots training and technical assistance program operated by the small systems, themselves, is the best way to bring most small systems

into compliance and to continuously improve the quality of rural drinking water.

3. The EPA funding of this program is very cost effective and outreach efficient.

The history of this program began with the anticipated financial and regulatory impact of the Federal Safe Drinking Water Act. Small systems were unprepared for this type of new regulatory effort, and through their state rural water associations, they created the concept of the self-help grassroots training and technical assistance program. The program used a new concept which allowed rural water folks to initiate and encourage actions that would bring their own systems into compliance with a new federal law. In starting up the program, it was difficult at first to gain the cooperation and support of such diverse groups as state health departments, FmHA state offices, EPA regional offices and educational institutions training water operators. There was concern over turf protection and exactly what the role would be for each group. The conclusion now reached by all groups in Georgia is that by operating a grassroots training and technical assistance program, the effectiveness of all agencies involved in training and technical assistance for rural water is enhanced. For example, better operated water systems are self-sufficient and often accrue funds for health-related capital improvements. In other areas such as water loss reduction, significant energy savings are realized. These types of improvements are often accomplished through simple, clear on-site advice given through this program.

Initially, EPA included the program in its annual budget request to Congress and asked that it be expanded to additional states. While the first states participating were in the South and Midwest, EPA asked that the program be tested in the East and West. To no one's surprise, it turned out that the rural water problems throughout the country were very similar -- the NRWA was encouraged by EPA to move the program into these new states. However, in the FY 1981 federal budget, OMB eliminated the entire program without any effort to provide any alternative outreach program for rural areas. We appealed to this Committee to continue the program and you did. We have asked for periodic expansion to other states because of our success in new states and you have supported it. All of our state rural water associations thank you for this generous help.

The essence of this program is its solid grassroots base. It is folks working with folks where folks live and work. It is a program that is immediately responsive to resolving rural water system problems in a manner that is compatible with the rural way of doing business. The program provides:

- frequent training sessions in different small communities covering a variety of rural water subjects from testing to systems management
- a person who spends a minimum of ten days each month on-site with small systems
- monthly or quarterly newsletters with simple advice for improvement of water system operations, as well as a very clear description of changing EPA standards for SDWA compliance
- immediate state-wide on-site assistance for any small system expressing operation, management or environmental quality difficulties

- coordinated efforts within each state to press for increased state and local funding which, in turn, reduces demand on FmHA grants and loans, and expands funds available for helping systems meet SDWA compliance deadlines

- cooperation from all small water systems with EPA and state regulatory personnel without the threat of immediate enforcement allows these agencies to deliver their message and monitor the level of effort for SDWA compliance among rural water systems in a cooperative atmosphere

The number of participants in the training sessions continues to increase as do the number of rural water systems actively participating in the overall state association programs. For example, in the 12 months from January 1, 1988 through December 31, 1988, state associations conducted 513 workshops and provided training for 22,622 rural water operators and other personnel representing 10,561 water systems nationwide. With the constant turnover of small system operators, many of those persons have never attended water system training sessions. Over 7,500 technical assistance visits, including visits for serious compliance problems with the Safe Drinking Water Act, were also carried out and were normally the only hands-on assistance provided to these systems to help them meet the requirements of the Safe Water Drinking Act. Attached are two charts outlining state-by-state assistance visits and training sessions over the past 12 months.

We are meeting with you today at a time when we can see that much has been accomplished in improving the capability of small systems to meet SWDA requirements. However, with the rapidly expanding number of requirements under the new law, much more will need to be done.

For the first time in eight years, the President's budget for the FY 90 program -- $1 million. The program had the support of EPA during the budget process and is part of the new EPA emphasis on small community environmental problems. With over 10,500 small community systems participating in the program, this has the broadest impact of any EPA rural environmental initiative.

As we have done in the past, we are asking you and the Committee to provide funding for our program. In addition, our special request this year is for additional funds that will allow this program to go into the other states. In Georgia, the program complements and strengthens the work of other environmental programs and agencies, and we believe it will do the same thing in new states. We need to give the small water systems in every state the capability of operating their own grassroots assistance programs. It has given EPA a strong partner in Georgia and we urge you to allow all small systems in other states to participate. To allow for a full nationwide program, it would require an increase from $2.7 million to $3.9 million for next year. We respectfully request your consideration for this additional funding.

TECHNICAL ASSISTANCE TOTALS - TRAINING & T/A PROGRAM
January, 1988 through December, 1988

STATE	TECHNICAL ASSISTANCE VISITS	MAINTENANCE AND TREATMENT	MANAGEMENT FINANCE	OTHER
ALABAMA	194	105	77	12
ARKANSAS	280	131	148	1
COLORADO	177	86	45	46
FLORIDA	136	38	18	80
GEORGIA	115	76	23	16
ILLINOIS	217	171	20	26
INDIANA	244	205	34	5
IOWA	177	112	32	33
KANSAS	187	35	79	73
KENTUCKY	309	194	54	61
LOUISIANA	231	135	76	20
MAINE	196	42	71	83
MINNESOTA	208	129	57	22
MISSISSIPPI	356	272	46	38
MISSOURI	233	79	99	55
MONTANA	256	123	52	81
NEBRASKA	241	85	45	111
NEW MEXICO	212	114	57	41
NEW YORK	110	76	6	28
NORTH CAROLINA	85	50	21	14
NORTH DAKOTA	168	103	38	27
NORTHEAST	287	239	8	40
OHIO	328	274	10	44
OKLAHOMA	355	289	45	21
OREGON	148	47	26	75
PENNSYLVANIA	114	61	33	20
SOUTH CAROLINA	289	122	81	86
SOUTH DAKOTA	150	77	29	44
TENNESSEE	362	166	124	72
TEXAS	71	21	33	17
UTAH	170	116	49	5
VIRGINIA	420	144	120	156
WEST VIRGINIA	182	136	27	19
WISCONSIN	295	222	19	54
Total:	7503	4275	1702	1526

TRAINING TOTALS - TRAINING & T/A PROGRAM
January, 1988 through December, 1988

STATE	TOTAL # TRAINING SESSIONS	NUMBER OF SYSTEMS	OPERATORS/ MANAGERS	DECISION MAKERS	OTHERS	ADMINISTRATIVE	TOTAL PERSONNEL
ALABAMA	14	261	270	226	137	74	707
ARKANSAS	16	443	571	61	182	25	839
COLORADO	9	260	313	62	97	80	552
FLORIDA	8	230	221	48	161	52	482
GEORGIA	16	367	392	138	296	52	878
ILLINOIS	16	349	403	45	108	7	563
INDIANA	14	160	173	130	101	103	507
IOWA	16	333	543	36	105	70	754
KANSAS	17	808	905	461	822	163	2351
KENTUCKY	13	246	403	70	288	49	810
LOUISIANA	13	514	473	34	41	7	555
MAINE	11	184	162	37	59	29	287
MINNESOTA	8	127	172	33	154	13	372
MISSISSIPPI	25	1009	801	410	207	108	1526
MISSOURI	16	259	311	51	247	65	674
MONTANA	13	233	221	76	39	15	351
NEBRASKA	20	376	504	29	168	4	705
NEW MEXICO	10	155	140	75	108	4	327
NEW YORK	13	548	801	28	91	0	920
NORTH CAROLINA	19	387	503	30	262	19	814
NORTH DAKOTA	25	130	138	65	182	25	410
NORTHEAST	28	317	970	22	15	5	1012
OHIO	16	152	153	125	106	41	425
OKLAHOMA	16	342	251	220	208	144	823
OREGON	10	114	100	39	47	8	194
PENNSYLVANIA	12	302	304	108	92	27	531
SOUTH CAROLINA	18	252	193	78	448	28	747
SOUTH DAKOTA	15	161	153	94	64	37	348
TENNESSEE	15	309	442	167	130	77	816
TEXAS	9	179	153	100	138	37	428
UTAH	21	238	383	18	56	4	461
VIRGINIA	17	329	384	48	109	28	569
WEST VIRGINIA	12	190	284	31	75	10	400
WISCONSIN	12	297	421	10	51	2	484
Total:	513	10561	12611	3205	5394	1412	22622

STATEMENT OF JAKE BAIR, DIRECTOR, MARYLAND CENTER FOR ENVIRONMENTAL TRAINING

Senator FOWLER. Mr. Jake Bair, Maryland Center for Environmental Training.

Mr. BAIR. With some fear I announce that I, too, am a Marylander, and I'm proud of it.

Senator FOWLER. Well, we're used to it now. The next time you all come and spend all day bring some crabs with you or something. [Laughter.]

Mr. BAIR. Thank you, sir. I'm the director of the Maryland Center for Environmental Training which I founded in 1983.

We are a success story, and I really want to emphasize that aspect of my presentation. We began with $5,000 in State money in 1983 and a 2-year grant from EPA of $105,000 under the section 104(g)(1) program. We now receive $10,000 from EPA and almost $300,000 from the State of Maryland for a broad range of environmental training tasks.

We have gone from simple wastewater training at NPDES problem plants to everything from asbestos, worker training, hazardous and toxic waste cleanup crew training, water and wastewater training for over 1,000 students last year, and over 400 days of onsite technical assistance to wastewater treatment plants that are discharging into the Chesapeake Bay. We brought 12 of those plants into compliance.

I say this to illustrate what State training centers can or could become, and I say it because I wish to urge the subcommittee to nurture this small, very modest movement. There are now about 35 State training centers across the country. We all began with very small or medium sized, in a few cases, EPA grants. Most of us are gradually phasing out of EPA money and proving that State and local resources can be mobilized for environmental workforce training.

That is my principal point of pride, that we have mobilized a lot of money in Maryland, and I know that many other States are doing so as well. There are enormous environmental workforce training challenges in front of us that are just terrible just in asbestos alone, for example.

So we urge that EPA through the subcommittee nurture and help these State training centers to continue to grow.

Senator FOWLER. How many are there?

Mr. BAIR. There are about 35 functioning now, most in conjunction with local educational institutions, but a few within regulatory agencies as well.

Senator FOWLER. What is the breadth of the training besides asbestos? What do you train them to do?

Mr. BAIR. Currently in Maryland we train once a month hazardous and toxic waste cleanup crews. We are training groundwater protection people. We wrote a textbook in groundwater protection for the State of Maryland. We are getting into some municipal solid waste as soon as we can. As soon as I can find a way into the area, we're going to be doing that as well.

Our principal concern still is water and wastewater and, of course, the bay.

Senator **Fowler**. When is the rock fish ban going to be lifted, do you think?

Mr. **Bair**. Well, that was originally a 5-year ban, and, of course, there are a lot of Maryland fishermen would like to have that answer as well. I hope for not 2 more years at least. We are seeing nice regrowth now with a lot of school fish coming up the bay.

Senator **Fowler**. I caught a few of them last October fishing for blue fish.

Mr. **Bair**. Did you throw them back?

Senator **Fowler**. Yes, in a hurry. [Laughter.]

Mr. **Bair**. We thank you.

Senator **Fowler**. I know what the fine is.

Mr. **Bair**. We thank you.

Senator **Fowler**. But it was amazing to me that these were three to four pounders and they looked great. I mean you could tell it was a healthy fish.

Mr. **Bair**. I would add just one point. No one knows.

Senator **Fowler**. It also shows what we can do, that it can be done.

Mr. **Bair**. I want to brag about one other thing. The largest breeder of rock fish in the world is the Baltimore Gas and Electric Company, which has been doing it at one of its Baltimore plants as a response to the environment, and we are very proud of that.

Senator **Fowler**. Very fine. Thank you, Mr. Bair.

[The statement follows:]

STATEMENT OF JAKE BAIR

Good Morning. My name is Jake Bair, and I am the Director of the Maryland Center for Environmental Training, located on the campus of Charles County Community College, in La Plata, Maryland.

Our Center, commonly referred to as "MCET", is one of more than 30 such state environmental training institutions which have been built throughout the country with EPA funds appropriated under section 109 (b) of the Clean Water Act. Our original purpose was to provide operations training to the staffs of wastewater treatment plants, in support of the NPDES program. Quickly, however, our mission has broadened to include training and on-site technical assistance programs for the operators of potable water treatment and distribution systems, hazardous materials handlers and clean-up crews, asbestos abatement workers, ground water protection personnel and, soon, managers and operators of municipal solid waste disposal systems. For those of us who early in the game were able to establish and nuture sound working relationships with our respective state regulatory agencies, life has been a rapid expansion of environmental workforce training challenges.

Let me illustrate. In the past year alone my training center has done the following:

1. Provided over 400 person/days of on-site, one-to-one technical assistance to wastewater and water treatment plant operators, in the process bringing 12 Maryland wastewater treatment plants into full NPDES compliance, and assisting three communities with severe potable water treatment and supply problems to plan and operate upgraded systems.
2. Provided 105 one-day or longer technical classes for over 1100 Maryland wastewater and potable water system operators.
3. Provided over 40 days' training to asbestos abatement

workers and supervisors, and an additional 26 to hazardous materials handlers and clean-up personnel, as called for in current OSHA regulations.

4. Completed a 200-page comprehensive technical training manual on groundwater protection in Maryland for use by regulatory personnel, well drillers, solid waste disposal technicians, and others who must protect Maryland's peculiar and sensitive hydrogeology.
5. Worked agressively in the Chesapeake Bay clean-up program by providing specialized training to plant operators at facilities discharging directly, or through tributaries, into the Bay.
6. Provided energy audits and energy use planning to 12 utility systems, resulting in first year savings of over $125,000 to those utilities and bringing to MCET an Energy Innovation Award from the Secretary of the U.S. Department of Energy.

We have accomplished all of this, and considerably more, with only $10,000 in EPA funding during Fiscal Year 1989. How has this been possible?

First, we have become a catalyst for significant state funding for environmental workforce training. Because we are local, and based at a known, reputable institution of higher learning, we represent a "safe" investment for state training, technical assistance and related funding. We work in day-to-day partnership with the Maryland Department of the Environment and, although we maintain programmatic independence and "call the shots" as we see them, so far the professional relationship has been one of great mutual trust and support. Many other state training centers share similar relationships with their state regulatory partners. Second, we employ only top professionals as instructors and technical consultants, and all are drawn exclusively from the ranks of practitioners. Since I started our Training Center in early 1983 it has been the rule that people instructing for us, or people rendering technical assistance in the field, must be fully certified and have at least five years' experience in a senior operations position at a utility or, in the case of asbestos removal or hazardous waste, in abatement work.

Third, most utilities are more than willing to pay reasonable costs for the professional development of their staffs. Last year my Center billed almost $35,000 in tuition and contract fees, although at $30.00/day per person, our tuition costs are a very small fraction of the charges which are typically made by private training consultants for comparable training.

Fourth, we are trusted by the communities with which we work, because we have no financial or political ax to grind. Our technical assistance work at local utilities is entirely free, because of state and EPA financial support, and we gain nothing from a successful venture on a community's behalf other than pride in a job well done and an occasional letter of thanks from a grateful elected official.

The lesson in all of this is that the so-called "109-b" state training centers are an emerging force in environmental work-force training. Many of our centers have been successful at mobilizing local and state financial and other resources we have reached large numbers of people needing training in order to improve environmental protection. Further, all our centers are ultimately creations of EPA. EPA built them, and EPA funds were or are used to staff them during their early existence. While Maryland's center is now financed primarily with state and local funds, we all still need EPA's support and encouragement, particularly if we are to continue responding to new program challenges. I would therefore urge strongly that the subcommittee seek to continue and expand EPA's very modest support of state environmental training centers, particularly those in their first years of existence. With wave after wave of new environmental rule making, newly discovered environmental hazards, and expanding environmental systems workforces, every state is going to need sound and well structured comprehensive environmental worker training centers. While EPA has no obligation to assist such centers perpetually, it does have a responsibility to continue helping the ones still attempting to establish themselves, and the ones trying to build new programs. Thank you for this opportunity to testify.

STATEMENT OF RICK HIND, ENVIRONMENTAL PROGRAMS DIRECTOR, U.S. PUBLIC INTEREST RESEARCH GROUP, ON BEHALF OF CLEAN WATER ACTION

Senator **Fowler**. Mr. Rick Hind, Clean Water Action and Washington Post correspondent.

Mr. **Hind**. Good morning, Senator.

Senator **Fowler**. I have a letter to the editor for Mr. Hind of the Washington Post this morning I see.

Mr. **Hind**. Good morning. It's a related subject as well.

Today I'm representing the U.S. Public Interest Research Group and the Clean Water Action Project. Eric Draper, their campaigns director, couldn't be here this morning, and I'm filling in.

Together, our groups have over 1.5 million members in 30 States, and we are very happy to be here this morning to talk to you about the pressing needs of EPA funding, and in particular funding for clean water programs.

Despite the rhetoric of the campaign last year, we see a tremendous cut in the sewage treatment funding of clean water this year proposed by the President, including no money for the Boston Harbor cleanup.

In addition, the administration has collapsed the nonpoint source and wellhead protection programs into one program that makes it look like more dollars are there than really are and it's inadequate and not up to the levels authorized by both the Clean Water Act and the Safe Drinking Water Act.

In fact, the Clean Water Act, section 319 nonpoint program is at only $7 million. It's authorized to be $100 million for a year. We estimate that the administration is only asking for $8 million for the wellhead protection program. That is authorized at $35 million a year.

We would ask the committee to support both $100 million for section 319 and $35 million for the wellhead protection program.

The administration also fully funded the Superfund program and cut the sewage construction grants program creating a situation that could tempt a movement of moneys from one to the other, and we would urge to reject any temptation to do that and to fund both programs as Congress intended as in all cases that I'm referring to this morning.

As you may know, nonpoint source pollution is the bigger water pollution problem we face in this country, and it's the reason for the majority of pollution going into lakes and about 45 percent of the pollution that goes into estuarian waters.

In the case of wellhead protection, the program offers us hope to prevent groundwater contamination, which I know you've invested a lot in yourself already, in rural areas especially where we see virtually every State being threatened by groundwater contamination in the last few years.

We also would urge more personnel for enforcement of the agency, which again the administration cut for clean water enforcement, especially given the need for more permitting and more crackdowns on violations that are widespread.

We further would endorse full funding of the construction grants program at $2.4 billion as the 1987 Clean Water Act amendments called for.

Thank you for the opportunity to be here this morning.

Senator FOWLER. Thank you very much, Mr. Hind.

[The statement follows:]

STATEMENT OF RICK HIND

Thank you, Senator Mikulski and Members of the Appropriations Committee, for giving me the opportunity to comment on EPA's FY 1990 Budget. My name is Rick Hind, I am Director of Environmental Programs for U.S. Public Interest Research Group. I am speaking on behalf of my organization and Clean Water Action, whose Campaigns Director, Eric Draper, could not be here today.

We asked to testify today because of our concern that water protection programs authorized in recent years are not being implemented in ways that Congress intended because they are not funded at adequate levels. We are further troubled that EPA may not be enforcing water protection programs as ambitiously as they should because of inadequate funding and staff levels. We are worried that state and local governments, charged with the front line responsibility of implementing water protection programs, are being shortchanged by the Administration's ever tighter budget requests.

I will address specific remarks to the Clean Water Act program known as Section 319, Nonpoint Source Pollution Management; the Safe Drinking Water Act program known as wellhead protection; the grants to states under Section 106 of the Clean Water Act and construction grants and revolving loans for sewage treatment.

Before dealing with specific programs, I want to comment on the President's request for EPA. It is ironic that the President would request full funding for a troubled program -- that is Superfund, while cutting funds for a program that continues to make a major contribution to environmental cleanup -- that is sewage treatment construction. I believe that the President's people contrived a situation to force a trade-off between the two programs. This temptation should be resisted.

The President's budget is offensive in light of the distorted messages we heard last year about our nation's coastal waters. The absence of funds for Boston Harbor is so glaring, he mocks those of us who truly support ocean pollution cleanup.

The President's request also unnecessarily collapses two important state programs into the water quality management system. Under Section 106 of the Clean Water Act, EPA is authorized to make grants to state agencies to assist with administering the law. The Administration has decided to place within its request for Section 106 an additional request for funds for nonpoint source management programs and wellhead protection activities.

This move will minimize the effect of authorization of the Nonpoint Source Management under Section 319 of the Clean Water Act and Wellhead Protection under Section 1428 of the Safe Drinking Water Act. We ask the Appropriations Committee to reject the Administration's attempt to merge these authorized programs and to fund them individually at their authorized levels.

FUND NONPOINT AT THE AUTHORIZED LEVEL OF $100 MILLION

Nonpoint sources account for the majority of pollution in most states' waters. This category of pollution is the cause of failure to meet water quality goals in many areas. Identification, control and reduction of these sources is difficult and proving to be far more elusive then control of point sources.

The impact of nonpoint sources versus point sources is estimated to range from 76 percent for lakes to 45 percent for estuarine waters. While we are winning the war against water pollution from industry and sewage, we are losing against runoff.

With the nonpoint problem, there is no single Exxon Valdez or municipal sewer system for citizens to rally against. The sources are diverse and widespread and will ultimately require small changes in the way most of us live and do business including:

- o Land use controls with special protection areas, zoning and planning.
- o Conservation land acquisition to protect sensitive areas.
- o Stormwater controls and watershed controls for development.
- o Strict erosion and sediment control.
- o Control of farm inputs, animal wastes and irrigation.
- o Rigid planning and controls on mining and silviculture.
- o Control and reduction of consumer products such as motor oil and lawn care products that result in water pollution problems.
- o Reduction of solid and hazardous waste.

EPA has chosen to recommend to states a voluntary approach to nonpoint source pollution management. It is easy to read support for that action into the intent of the law which is so anemic as to have been described by its supporters as "the best we could get". Public intolerance for water pollution and government's failure to act will soon reach a point where passage of a regulatory program will be politically possible and environmentally necessary.

Examples of nonpoint pollution impact on surface and ground water can be found in every state. In their Nonpoint Assessment Reports required by the Clean Water Act, most states identified problem areas that needed control programs.

For example, Maryland attributes much of the Chesapeake Bay's continuing nutrient problems to agriculture related nonpoint pollution. Though most point sources are controlled, the Bay is impaired by farm chemicals, animal wastes and sediments. The Chesapeake Bay's problems have been replicated in most other coastal waters. New York claims that urban runoff causes more pollution problems in Long Island Sound than point sources. High coliform counts, which damage shellfish, and landfills are singled out as problems requiring controls.

The Administration has finally, three years into the authorized funding period, requested $7 million for nonpoint programs. The authorized level is $100 million. EPA's request and the activities it intends to fund fall far short of the expectation and need recognized in Section 319.

The Administration's summary announced the funding request in a bundle of water initiatives made to look like serious new efforts would be undertaken. In fact either EPA will be able to fund 1 FTE per state or will have to target the funds selectively to win marginal successes with the most easily controlled nonpoint sources while others are uncontrolled.

We ask that you fund Section 319 at the authorized level of $100 million and direct EPA to spend the funds in accordance with the intent of the law. An alternative action could be accepting EPA's request and declaring Section 319 dead. Public support could then be turned to a regulatory program.

FUND WELLHEAD PROTECTION AT THE AUTHORIZED LEVEL OF $35 MILLION

Section 1428 of the Safe Drinking Water Act requires states to develop a program to protect wellhead areas to prevent drinking water contamination. The programs require that sources of contamination be identified and controlled to prevent the fouling of groundwater supplies.

We are now in the fourth authorized year of this program. The law authorized $35 million for FY 1990. EPA intends to grant Section 106 funds to protect groundwater. But this unspecified amount falls short of the need.

Billions are now being spent cleaning up and treating groundwater contamination from past pollution activities. Recently, EPA announced that utilities will have to spend billions to test and treat drinking water supplies threatened by pesticides and toxics.

A relatively small expenditure on wellhead protection to prevent contamination seems prudent in light of the costs of testing, treatment, cleanup and provision of alternative supplies.

We ask that you fund Wellhead Protection at the authorized level of $35 million.

FUND SECTION 106 AT $100 MILLION

New CWA program requirements for stormwater and individual control strategies for toxics mandate an increase in grants for state water pollution control agencies. We recommend an increase to $100 million while funding other authorized programs separately.

INCREASE EPA'S ENFORCEMENT AND PERMITTING BUDGET

The Administration's request cuts FTEs from permitting and enforcement. This continues a decade long decline in EPA's enforcement work. In many states regions poor permit writing has allowed too much point discharge of pollutants. As states and regions move to write new permits for toxics, we need more FTEs, not less. Enforcement is a process involving letters and orders and building legal cases. More, not fewer, enforcement FTEs are necessary.

FUND SEWAGE TREATMENT AT THE AUTHORIZED LEVEL

The nation's needs to capitalize sewage treatment plants exceeds even the funding authorized in the 1987 Amendments. In addition to construction, states depend on these construction grant funds for water quality management and the set asides for estuaries and nonpoint are important revenue sources. We endorse full funding of $2.4 billion for construction grants and state revolving loan funds.

Thank you.

STATEMENT OF PAUL F. LEVY, EXECUTIVE DIRECTOR, MASSACHUSETTS WATER RESOURCES AUTHORITY

Senator **Fowler**. All right, I understand that Mr. Levy is going to go first. Paul F. Levy of the Massachusetts Water Resources Authority.

Mr. **Levy**. Thank you, Mr. Chairman.

Boston Harbor, as you know, has received some notoriety over the last year as a result of some television ads during the presidential campaign. What those ads left out, and I'm sure that it was inadvertent, was that there has been substantial progress made in the cleanup of Boston Harbor over the last 4 years, and we are well on our way to having a swimmable and fishable harbor within the next decade.

That progress has been made possible as a result of a partnership among our ratepayers who are going to see their water and sewer bills go up to over $1,000 per family by the end of the decade.

Senator **Fowler**. What is it now?

Mr. **Levy**. It's about $300 a family. So we are looking at some substantial increases.

The State legislature is also in the midst of passing a $1.3 billion State funding program for sewer projects in the State, and with your help the Federal Government has contributed as well with the special authorization for Boston Harbor and also with the regular funding through the Clean Water Act.

I would like to urge you today to please fulfill the rest of that commitment with a special appropriation for Boston Harbor. We have allocated $41 million, and we are seeking the final $59 million of the $100 million authorization. We are also seeking the full funding of the Clean Water Act.

Senator **Fowler**. When was that $100 million?

Mr. **Levy**. That was 1986. We put it to good use and we certainly have a good place to put the rest of it also. So we really just urge your support of that.

Thank you.

Senator **Fowler**. Thank you very much.

[The statement follows:]

STATEMENT OF PAUL F. LEVY

Mr. Chairman, Members of the Committee:

My name is Paul F. Levy and I am the Executive Director of the Massachusetts Water Resources Authority. On behalf of the Board of Directors and our 2.5 million ratepayers, I am here to urge your support for the appropriation of $59 million for the Boston Harbor cleanup effort, and full-funding of the Clean Water Act authorization.

Every day, every time the 2 1/2 million people of greater Boston flush their toilets or run their faucets, every time one of the 5,500 industries in our system discharges toxic chemicals, every time a good rain washes street grime into the storm drains--the fragile estuary of Boston Harbor suffers a little more. So do the inhabitants of the harbor waters, so do the fishermen, so do the families who'd like to bring their kids to the beach, so does the economy of New England.

The public health implications of a polluted harbor are frightening. Eighty-two percent of flounder and other fin-fish in the harbor are diseased; twenty-three percent have visible tumors. High levels of cancer-causing PCBs have been found in lobster tamale. Half of the harbor's 4,700 acres of shellfish beds are closed permanently--all of them are closed after it rains. Even those clams which can be harvested must undergo a purification process. Swimmers venturing into the waters of urban beaches risk gastroenteritis and other infections--not to mention the questionable aesthetics.

The picture is pretty bleak. What Roger Ailes' Boston Harbor ad failed to mention, however, is what's being done in response. Construction of $6.1 billion worth of new wastewater treatment facilities to end the pollution of Boston Harbor is well underway and on schedule.

o A recently opened $4.8 million Combined Sewer Overflow facility will help to protect two popular Boston beaches from overflows of raw sewage this summer.

o Construction of piers to handle workers and materials arriving by water at the site of the new treatment plant is on schedule and 45% complete.

o Difficult and controversial decisions to site wastewater and sludge treatment facilities have been made.

o Program, construction management and design engineers are in place.

o An infiltration and inflow correction program is helping to repair aged sewer pipes to cut down on the amount of wastewater flowing to the harbor.

o Plans are in the works to end Combined Sewer Overflows from about 88 points around the harbor.

o Armed with stronger regulations and an increased workforce, the MWRA is cracking down on industrial polluters dumping toxic wastes into the sewer system.

o A new system will prevent floating pollution--grease, fats, plastics, and personal hygiene products--from ending up on area beaches this summer.

o An aggressive water conservation program has the double benefit of preserving precious water supplies and reducing the amount of water going into the sewer system.

We are building the nation's second largest sewage treatment facility and the biggest public works project in New England's history. At peak, about 2,000 workers will be involved. We will be pouring a million yards of concrete and moving six million yards of dirt, and building the biggest outfall tunnel in the world.

Compared to existing plants, the new facilities will be four times more effective in removing solids and nine times better at preventing toxics from entering the harbor.

Boston is lagging behind most major cities in building pollution control facilities, but we can take advantage of that by learning from the experiences of other cities and avoiding their mistakes. Unfortunately, the price of that knowledge is steep, and the construction grants program won't be around to help us as it helped so many others across the country.

Since it took over Greater Boston's water and sewer system in 1985, the MWRA has raised water and sewer rates 200%. By fiscal year 1990, that increase will be 300%. In 1985, $46 million in water and sewer charges was collected. In 1989, that figure will be over $190 million. An average family of four in our service area now pays about $291 a year for water and sewer services. In 10 years, they'll be paying about $1,200 a year.

The immense costs of building the new facilities, in conjunction with the money we must spend just to shore up the old water and sewer systems, places an unbearable burden on our ratepayers--a burden they simply cannot meet alone.

The MWRA is making every effort to draw upon its own resources to meet the needs of the region. In addition to the sharp increases in water and sewer rates, we have issued $450 million in bond anticipation notes and will be marketing $7 billion in bonds over the next 10 years.

The MWRA is also working with the state legislature on a $1.3 billion bond issue to fund water pollution control projects throughout the state. Even with the maximum share of state bond and revolving loan funds, however, additional federal funds are critical to prevent intolerable rate increases to our user communities.

When it passed the Clean Water Act in 1972, the federal government began a federal-state partnership which would result in transformation of the nation's water resources. By the 1980s, many inland sites such as the Great Lakes, Lake Tahoe and the Hudson River were being reclaimed for future generations.

Under this historic program, over $40 billion has been authorized to help fund 15,000 projects around the country. Federal funding has covered 75% of the cost of many of these massive capital projects.

In recognition of the Boston Harbor crisis, Congress set aside $100 million in the 1986 reauthorization of the Clean Water Act. Of that, $41 million has already been appropriated and put to work on vital harbor projects such as:

Deer Island - Early Site Preparation	$25,000,000
Marine Borings - Effluent Outfall Tunnel	10,000,000
Fore River Staging Area Improvements	7,630,000
Project Cost	$42,630,000

Congress has already made an investment in the future of the Harbor. We anticipate spending the remaining $59 million on two important components of this huge, complex project: the first phase of the new primary treatment facilities, and the utilities needed to support the massive new primary and secondary plants on Deer Island in Boston Harbor.

Phase I of the new Primary Treatment portion of the plant includes pumping and transmission facilities which will modify the Winthrop Terminal, the Main Pump Station and the North system Force Main. The Winthrop Terminal Facility is the first stop for wastewater flows coming from 21 communities in the MWRA's North System. Here, debris is screened out of the wastewater to protect downstream equipment from damage.

Six new pumps will have 600 horsepower motors and each will be capable of pumping 32 million gallons of wastewater per day. After leaving the Winthrop Terminal, the wastewater will be pumped to new "grit" facilities, where sand and similar materials are removed.

Some of the flow from the North System, along with the wastewater from the Boston Main Drainage Tunnel, goes through the Main Pump Station. Here, too, modifications must be made to pump the wastewater to the higher elevation of the new facilities. Ten new pumps with 3000 horsepower electric motors and variable speed drives will be installed. Each will be capable of pumping 90 million gallons of wastewater per day. Major piping renovations will also be made at the Pump Station to provide for better operations, maintenance and back-up capacity.

Two new 11.5 foot force-mains will then carry the wastewater from the Winthrop Terminal and the Main Pump Station to the new North System grit facilities.

Design of the Winthrop Terminal and Main Pump station began in January 1989 and will be completed in January 1990. Design of the force mains is scheduled for completion in July 1990. Construction will begin in October 1990 and be completed in December 1993.

The Deer Island-related projects will require construction of new water and gas lines and additional auxiliary and telephone services to the island. The current water service is insufficient and there are no natural gas supply lines. Electrical duct banks will be installed simultaneously with gas and water lines to provide for overland electrical cable service.

Design of the utilities will be completed in mid-1989, and construction will begin in early 1990. All new utility services will be installed in one common trench to minimize disruption to the community.

The Phase I costs are estimated $65,000,000, and the utilities at $24,000,000 for a total of $89 million. A 75% federal share would be $66,750,000. The $59 million, although a drop in the bucket relative to the $6.1 billion estimated cost of the Harbor Project, would nonetheless ease some of the burden for our ratepayers and help buy time while we seek alternative funding sources.

A recent EPA assessment of the nation's water pollution control needs estimated that a $83.5 billion investment is necessary to meet Clean Water Act standards. The President's request of just $1.2 billion in Title II and Title VI funds represents a small fraction of the true costs of restoring our nation's waterways. It is 50% less than Congress' $2.4 billion authorization and 38% less than last year's $1.9 billion.

We recognize the harsh realities of the federal budget deficit. And, of course, some of the burden must be borne by states and by the users of sewer systems. But in addition to the staggering costs of building new sewage treatment facilities for Boston Harbor, our 43 communities--and cities and towns across America--must also address their own infrastructure needs. Their pipes are as old as ours, and they need the full $2.4 billion appropriated as desperately as we do.

The aging roads, bridges, subways and sewer systems of our older cities supported the growth of this nation. Eastern states have historically supported large federal water projects in the western part of the country. Now that our ailing infrastructure needs to be rebuilt, the federal government should not turn its back on us.

We strongly urge you to appropriate the full $2.4 billion authorized in the clean Water Act, and the balance of the $100 million for Boston Harbor.

A healthy environment and a vital infrastructure are our legacy to future generations. I hope I can count on your support for a fair federal commitment to water pollution control projects.

Thank you.

STATEMENT OF FREDERICK H. ELWELL, VICE PRESIDENT, AMERICAN WATER WORKS ASSOCIATION

Senator **Fowler**. I'll let you gentlemen introduce yourselves.

Mr. **Elwell**. I am Fred Elwell with the American Water Works Association.

Senator **Fowler**. Welcome, Mr. Elwell.

Mr. **Elwell**. Mr. Chairman, I am here representing the American Water Works Association, which represents about 48,000 members and 3,300 utilities which supply 75 percent of the drinking water in the United States.

I have submitted written testimony already, and I'll just summarize several points.

We are here to support an increased funding level for EPA in the drinking water program. You have already heard from the Rural Water Association as to the impacts of the Safe Drinking Water Act. That on the number of utilities in the United States is enormous and there are a number of issues that need to be addressed by EPA.

The first of those is research. While the number of contaminants that will be regulated will increase from 22 to 200 by the year 2000, the research dollars in health effects research simply is not there in EPA and needs to be to develop regulation that deals with sound science and is well thought out and well prepared.

We also very, very much support a look at a revolving funds being set up, not grants, but loan programs to deal in particular with the very, very small systems, but those systems that are going to have trouble complying with the drinking water program as it proceeds.

In addition to that, we strongly support funding for the State programs. Primacy and the State and Federal partnership is a very, very important aspect that we in the utility business feel exists now, and we would hope that that would continue with proper funding for the State programs so that they can indeed continue to operate those programs and not return them to EPA.

And, finally, the small system issue is one that needs attention. We are working closely with the Rural Water Association in the American Water Works Association to develop technical training in programs that can be utilized. There needs to be funding and a strong look at the small systems because there is going to be major impact in them not being able to comply with the new regulations.

There are a number of other issues that I could talk about I realize. I appreciate your time and the committee's time allowing us to appear in support of proper funding levels for the Environmental Protection Agency.

Thank you.

Senator **Fowler**. Thank you, Mr. Elwell, very much.

I'm going to ask Trent Norris here of my staff to send to you a couple of bills on water use that I've been working on for several months. One of them is a water conservation measure having to do with taking advantage of modern technology to conserve water and set standards for plumbing fixtures, for example, and another has to do with working on ground water contamination in the major farm bill for 1990.

But with all the work that you and yours do in this, if you would take the time and have somebody take a look at it and give me your suggestions on those two, I would appreciate it very much.

Mr. **Elwell**. We would be happy to, sir, and we have been working with Trent, members of our Washington staff, and we appreciate that opportunity and look forward to continuing it. It's very helpful to us and hopefully it is to you.

Senator **Fowler**. Thank you very much.

[The statement follows:]

STATEMENT OF FREDERICK H. ELWELL

Good morning, Madam Chair. My name is Fred Elwell. I am Vice President of Camp, Dresser and Mckee, an environmental engineering and consulting firm. I am here in my position as Vice President of the American Water Works Association to testify on the Environmental Protection Agency budget request and recent legislation which present serious funding concerns for us.

The American Water Works Association (AWWA) represents the individuals and organizations responsible for the planning, design, operation and regulation of public water systems necessary to assure an adequate quantity of safe, reliable and high-quality water. AWWA is a 108-year-old scientific and educational association and the largest association of professional drinking water people in the world. Our 47,000 plus members are comprised of utility operators, professional engineers, contractors, scientists, professors, health regulators, environmentalists and many others. Our membership also includes over 3300 utilities which supply 75 percent of the nation's drinking water.

Today the drinking water community faces its severest challenge ever. By reauthorizing and tightening the original Safe Drinking Water Act of 1974, Congress responded to the public's need for stronger federal drinking water standards. The United States has one of the highest standards of drinking water in the world and the drinking water industry is eager to make it even better. To retain consumer confidence and provide a product of unquestionable quality, we plan to meet or exceed these standards. In this cooperative effort, we also expect EPA and Congress to acknowledge the difficulty of implementing many of the necessary improvements and, in certain instances, provide for increased program support to assist with implementation of the Safe Drinking Water Act (SDWA) as amended in 1986.

Before I get into the problems and funding issues related to the SDWA, let me give you a brief profile of the drinking water industry -- a component of the broader drinking water community. In the U.S., there are 59,000 community water systems serving the public. Eighty-eight percent of these community systems are classified as "small" (serving 25-3300 people), although they serve about 10 percent of the total population. There are about 200,000 public water systems which include community systems (municipal and investor-owned), as well as schools, hospitals, work places, campgrounds, gas stations and other facilities that have their own water supply. Community systems serve 92 percent of the total population, and even though only 5 percent of the systems are classified as "large" (serving 50,000-100,000 people) and "very large" (100,000 people or more), it is these groups that drive the new SDWA quality requirements and costs, which have been estimated at a very conservative figure of $6 billion (these estimates could be as high as several billion per year for the next 20 years). Because small utilities lack extensive and broad rate bases, the real burden falls on their shoulders.

It is estimated that thousands of utilities will have difficulty complying with SDWA-driven regulations. Certainly the larger utilities (large and very large), regardless of ownership, will ultimately comply at the cost of significant rate increases. Many utilities will need additional financing to comply along with public agreement for substantial cost increases to each customer. Faced with limited staff, financial resources and information, small water systems -- in many cases already chronic violators of existing drinking water standards -- have few options available for compliance. They must be assisted toward compliance by federal programs, state programs and the drinking water industry or face serious enforcement actions that can result in severe fines or even criminal action.

How we pay for SDWA-driven changes in drinking water programs is a difficult question to answer. Water treatment and distribution systems vary greatly in type and operation. Local water supply is currently almost entirely financed by the consuming public based on a wide variety of rate structures. In many cases the rate structures must begin to reflect the real cost of water, a part of which will certainly be attributable to federal, state and local regulatory programs. The real cost of water is often hidden in municipally owned systems where tax incentives are frequently used and water is often subsidized to enhance economic development or as part of a social program. Privatized (or investor owned) and even government enterprise fund water programs, on the other hand, have few funding incentives. Both municipally and investor owned utilities cannot set the cost of water through rates without public approval by some elected or appointed body.

In the past, the water industry (and AWWA itself) has relied on very limited federal assistance programs. As indicated earlier, local drinking water supply operations have traditionally relied on a publicly approved rate structure, financed through customers, to fund their operations. We continue to strongly believe the consumer should pay for water, including all costs associated with producing and delivering it. The real impact then will be on the individual consumer or, more accurately, the rate payers. This is significant since in most cases rate structures are largely controlled by what the public is willing to pay. Strong public education and information programs must be carried out if we are to achieve public acceptance of the need for these changes. The drinking water industry must also fully understand the changes needed along with the reason for each change, and plan to implement them to the best of their ability. Voluntary Industry Compliance with the changes driven by the SDWA is not only desirable, it is essential. Compliance with the overall SDWA program requires the coordination and cooperation of federal, state and local programs, with industry and public both focused on program successes.

To facilitate this process, we propose an examination of the following possible funding measures:

1. Increased funding for EPA and EPA's drinking water program.

In one of his first official appearances before Congress as Administrator of EPA, William Reilly expressed his genuine surprise at the small size of EPA's total budget. Indeed, EPA received only 8.8 percent of the total VA/HUD/Independent Agencies Appropriation in fiscal 1989. By comparison, the Veterans Administration received 47 percent and NASA received 18 percent. This year's request for FY 1990 represents an 8.2 percent decrease for EPA compared to the FY 89 funding level.

We support a larger budget for EPA. While the Agency's statutorily mandated regulatory requirements have grown substantially over the past decade, its overall total funding has increased only marginally (excluding Superfund and construction grants). One of the hardest hit program areas has been Research and Development. R&D funding should have risen after FY86 with the promulgation of the new standards set by the reauthorized Safe Drinking Water Act. Instead, funding has decreased by over 20 percent in the last few years. The water supply industry can not carry out the extensive basic research required for health effects determination. Our affiliate organization, the American Water Works Association Research Foundation, represents an outstanding voluntarily funded R & D program. But they have all they can handle with applied and technical research to help utilities implement the regulations. Basic health effects research belongs with the federal government, and more federal funding needs to be given to EPA and others, specifically for this purpose. Failure to provide adequate funding can result in regulations which are based on insufficient information and which drive large expenditures that may not be necessary.

Similarly, Congress and the Administration have approved only marginal increases for EPA's drinking water operating program in recent years, despite the SDWA's more than doubling funding assistance, planning, enforcement, permitting and monitoring requirements as well as increasing standards by a factor of roughly four. AWWA strongly supports FY 90 drinking water funding at or above the $119 million request level. In particular, we would like to see larger amounts approved for enhanced assistance to the States, technical assistance support and regulatory efforts to set standards required by SDWA (including health efforts research).

The drinking water program should be treated as a high priority area within EPA. The ability of state programs to financially accommodate new requirements imposed on them by recently-authorized legislation should be an important consideration in deciding State grant funding levels. An under-funded program for FY 90 would be a major blow to States and small systems trying to comply with SDWA requirements.

2. Increased Funding for State Assistance

To assist the States in developing their programs, the Safe Drinking Water Act authorizes EPA to provide public water system grants for those States seeking primacy. AWWA is supportive of the primacy concept, where States act as the overseers of water programs fully qualified to interact with utilities on the local level and are eligible for adequate federal grants to support their efforts. We also support the view that States must accept full primacy or none at all -- the water utilities must deal with a single enforcement agency or the system will fail. Congress and EPA, on the other hand, should allow reasonable time for States to cope with the added administrative burden and provide adequate federal assistance to help staff these labor-intensive programs.

Unlike the federal Clean Water Act, the Safe Drinking Water Act provides no grant funds for upgrading treatment of drinking water. We have strongly advocated little or no cost sharing in our funding mechanisms. However, we strongly advocate the creation of State revolving loan funds, similar to those used by the water pollution control industry, to make capital investment funding available to some elements of the drinking water industry that currently do not have reasonable access to these funds. These programs would need to be initiated by some seed money. There are numerous options available for raising State revenues, such as a trust fund, a sales tax or a permit fee. We have not touched on all these options and leave them open for further discussion; however, some federal funding may be necessary to entice the States to set up revolving funds. Federal money does not have to be a great amount but it should be allocated to the States by an experienced federal agency. In three to five years federal funding might be greatly reduced or even discontinued, so the fund should be self-supporting, or adjustments should be made to drastically change its intent. All these details can be worked out in the regulatory process. What is important is that these revolving funds be State controlled, provide assistance to those that need it, and have the flexibility to grow from leveraged federal seed money that should be allocated by an experienced federal agency. The States must also be directed into a meaningful role; we cannot afford to have citizens who do not get an adequate supply of good quality drinking water.

There is much discussion about drinking water enhancement programs outside of EPA and whether the federal government should reauthorize additions to these programs, particularly for small systems in rural areas. The Farmer's Home Administration (FHA), the Department of Housing and Urban Development (HUD), the Economic Development Administration (EDA) and the Appalachian Regional Commission (ARC) are federal sources which have grants and loan programs for construction of water supply distribution and treatment works, but not for system operation and maintenance. AWWA has discussed with the Congressional Budget Office the possibility of accessing these federal sources, however, we make no recommendation other than this approach, as well as others, be considered.

We do want to make clear that this proposal calls for self-sustaining State water banks fully supported by the rates people pay for the water they use. Any funds that the federal government may provide should be limited to seed money, and it is the responsibility of all of us to take maximum advantage of that seed money for operation of state programs that enhance drinking water. We would be happy to assist the Committee in investigating the many options that should be considered.

3. Increased Funding For Technical Assistance to Small Systems.

The AWWA has long advocated regionalization of small systems and other options to reduce proliferation of financially non-viable systems. In addition to this approach, the Safe Drinking Water Act has authorized expenditures of up to $10 million a year for technical assistance for small systems. We urge more funding be made available for technical assistance, including funding for such industry efforts as the National Rural Water Association's training and technical assistance program and AWWA's own small system effort. This appropriation is essential for educational and "hands-on" assistance to small systems and for EPA to meet its statutory mandates and program levels. These funds are needed in addition to State grants and other EPA water programs.

Madam Chair, that's a look at revenue options we support to ensure adequate state drinking water programs. In addition to these proposals, several parallel actions can and must be taken by various parties to insure we all get what we want -- drinking water of unquestionable quality. Some of these actions are:

- Congress must insure that EPA grants for state primacy programs are increased.
- Congress and EPA must give special consideration to small systems in order to provide adequate technical assistance, insure the availability of funding for capital improvements, stop the proliferation of financially non-viable systems, encourage regionalization of systems and make real privatization a viable option.
- States need to aggressively seek new revenue sources for the support of drinking water programs.
- Industry needs to develop big brother assistance programs where feasible, and governmental agencies need to take measures to encourage this action. These Big Brother Programs where large utilities reach out to assist small systems (where possible) could greatly assist compliance and help to balance the cost of water, but they cannot be done at zero cost.
- Drinking water community or industry based organizations should

develop peer review assistance teams for troubled drinking water systems (AWWA is already working on such a plan).

We also believe that certain legislative conditions should be considered by the Committee in your deliberations on drinking water assistance. AWWA suggests that you consider several sound principles:

- o Drinking water utilities shall receive sufficient revenues from service and user charges to meet all operating and maintenance expenses and to finance all capital costs.
- o Drinking water revenues, including fines or assessments, must be placed in a restricted fund for drinking water use; these funds should NOT be diverted for use in other programs.
- o Water rate schedules should distribute the cost of water service equitably among all classes of customers, to the customers within a class and for each type of service.
- o Priority of water use should be accorded to what is vital for human needs.

Madam Chair, enforcement of environmental statutes is expected to have increased emphasis not just today but well into the next century. A major public information and awareness program by EPA and our industry is necessary to insure compliance with the changes that must and will be made over time. We at AWWA, in conjunction with other key drinking water organizations, are now developing major educational programs that will greatly assist in voluntary compliance with SDWA changes. Tens of thousands of small systems need technical assistance, management guidance and other aid. These programs will have a cost which we are willing to share in, but we cannot shoulder the burden alone and fear that EPA may not find the necessary resources. Thus, we may return to you at some time in the future for a special funding request. We ask that you keep an open mind on this issue and consider our request at that time. Thank you.

STATEMENT OF MARTIN G. MEFFERD, DIRECTOR, CALIFORNIA'S CLASS II UNDERGROUND INJECTION CONTROL PROGRAM, AND PRESIDENT, UNDERGROUND INJECTION PRACTICES COUNCIL

Senator FOWLER. Last but not least.

Mr. MEFFERD. I am Marty Mefferd. I am the director of California's Class II Underground Injection Control Program. I also represent my colleagues in ground water protection agencies in 35 States as the president of the Underground Injection Practices Council.

Senator FOWLER. What's your name?

Mr. MEFFERD. Mefferd. I'm here for Mr. Paque.

Senator FOWLER. Thank you, Mr. Mefferd.

Mr. MEFFERD. We are the State ground water protection officials who monitor ground water protection and also the operation of some 350,000 injection wells throughout the 50 States.

As you are probably aware, without injection wells there would not be a domestic oil industry in this country as we know it today because of the hundreds of enhanced oil recovery projects that utilize injection wells. The chemical industry would not have a viable way of disposing of some of their wastes and communities and States like Florida would not have an environmentally safe and effective way of disposing of their treated municipal wastes.

So the issue we bring to you today is one of exceptional importance. Our problem is the continued financial erosion between the Federal and State partnership that has a responsibility for permitting and inspecting our Nation's ground water injection control wells.

In fiscal year 1990, the EPA is requesting a $10.5 million funding level for the UIC State grant funding. That is the same level they requested in fiscal year 1989, but with one significant catch. They have earmarked $1 million for demonstration for class V projects.

Now we have no problem. We agree that class V wells have to have high priority by the EPA and the States, but we see no regulations being developed by the EPA. We don't see any on the near horizon. So the $10.5 million minus the $1 million for class V wells actually translates into a 10 percent cut for those inspections on existing wells.

The net result is that we are seeing a significant aspect of the national ground water protection program being cut at exactly the time that it should be growing.

As I mentioned, there are 350,000 injection wells throughout the country that we know of, but what does $10.5 million buy for the regulation of those wells? That $10.5 million for 350,000 wells equates to about $30 a well. For $30 you can't send an inspector out to those wells once a year. So that is how the program is stretched.

We don't need additional Superfund sites. What we need to do is adequately fund those programs like underground injection control, which is a pollution prevention type program, if we just consider that for the cost of one minor Superfund cleanup the entire national UIC program could be funded for all types of injection wells.

So the old adage that an ounce of prevention is worth a pound of cure certainly applies to this program. Yet, we find ourselves perpetually at the end of the list when it comes to receiving adequate funding for this program from EPA.

We think the program should be funded at the level originally authorized by Congress of $19.5 million, and with that increase the payoff is quite simple. You get a stronger national UIC program that adequately responds to class V wells, and you get the continued safe operations of the thousands of injection wells that are currently under existing State programs.

Therefore, we would urge your support for an increase to the EPA UIC State funding level to that originally authorized of $19.5 million.

Senator FOWLER. Well, you make a very compelling case on the prevention. It's a lot cheaper to prevent and conserve than it is to go back around with $1 billion sewage treatment plants and toxic waste cleanups and everything else that we get stuck with.

Mr. MEFFERD. Absolutely.

Senator FOWLER. Thank you, Mr. Mefferd. You're a Californian you say?

Mr. MEFFERD. Yes; I am. Thank you, Mr. Chairman.

Senator FOWLER. Well, thank you all, and especially you for your patience through the whole morning.

[The statement follows:]

STATEMENT OF M.G. MEFFERD

Madam Chair and Members, I am Marty Mefferd, Director of California's class II injection well program. I also represent my colleagues in groundwater protection agencies in 35 other states as President of the Underground Injection Practices Council.

We are the state groundwater protection officials who permit and monitor the groundwater quality and more than 350,000 injection wells in the fifty states. As you know, without injection wells, the United States could not have a domestic oil industry in the lower 48 states, the chemical industry would lose a safe alternative of disposing of hazardous waste at precisely the moment when other options such as land disposal are being taken away, and communities in states like Florida would lose an environmentally safe and effective way of disposing of their municipal sewage.

The issue we bring before you is, therefore, one of exceptional importance.

The problem which we have discussed with you over the past five years is the financial erosion of the federal/state partnership that permits and inspects our nation's underground injection wells.

In fiscal year 1990, the EPA is requesting the same $10.5 million funding level which was provided in fiscal year 1989, but with a significant catch. One million of this money will be earmarked for special demonstration projects concerning class V underground injection wells.

My colleagues and I agree that locating and monitoring class V wells is an important priority for EPA and the states, and deserves funding support. However, no regulations governing class V have been issued by EPA to date, and none seem to be on the near horizon. Therefore, the Administration's request of a $10.5 million funding level, minus $1 million for class V injection wells, actually translates into a 10 percent cut in funding for inspections and permitting of existing wells.

The result is that an important aspect of the national groundwater protection effort will shrink at precisely the moment when it should be growing.

As I mentioned, there are 350,000 injection wells that we know of in this nation. What does $10.5 million do to provide monitoring of those wells? Well, $10.5 million for 350,000 wells equates to $30 per well. For $30, you cannot send an inspector to those wells once a year. That is how thinly stretched this program is. We do not need more superfund sites to clean up. We need to adequately fund programs like underground injection control which is a pollution-prevention program. Just consider that for the cost of one minor superfund clean up, the entire national UIC program could be adequately funded for all types of injection wells. The old adage, that an ounce of prevention is worth a pound of cure, certainly applies to this program.

Yet, we are perpetually at the end of the list when it comes to obtaining adequate funding from the EPA. It is our belief that state programs should be funded at the level originally authorized by Congress of $19.5 million. These additional funds would help us deal with the growing number of federal and state groundwater protection regulations, and offset the financial erosion we have experienced over the years with a status quo budget authorization.

With such an increase, the payoff is simple. Namely, a stronger underground injection control program that adequately addresses class V wells, and the continued safe operation of the thousands of injection wells in this country that are currently under state regulation. We, therefore, urge your support for an increase in the EPA/UIC state grant funding to the originally authorized level of $19.5 million.

Senator FOWLER. I understand that Senator Mikulski will be here momentarily for one more panel before we take a break, but those of you who have already been advised, those of you who will be on at 3 o'clock, and I guess those people have already gone, we are going to meet in this building, but in room 124 at 3 o'clock.

Those of you who know you are going to be for Senator Mikulski, please stay.

I thank everybody else.

[A brief recess was taken.]

Senator MIKULSKI. We apologize for the delay here. We were at a hearing on illiteracy. Dexter Manley, the Washington Redskins defensive end, was testifying on legislation we are trying to move, and I'm trying to be in two places at one time, and the Maryland delegation started its meeting 10 minutes ago.

So we're going to proceed. I've been instructed that I'm going to call the hearing to order.

Jay Matricciani, why don't you go ahead and testify?

STATEMENT OF JAY MATRICCIANI, PRESIDENT, NATIONAL UTILITY CONTRACTORS ASSOCIATION

CONSTRUCTION GRANT PROGRAM

Mr. MATRICCIANI. Good afternoon, Madam Chairwoman.

It's my pleasure to testify before your subcommittee on the Environmental Protection Agency's construction grants program for wastewater treatment systems.

My name is Jay Matricciani. I'm president of the National Utility Contractors Association, a national 2,000 member organization of contractors, suppliers, and manufacturers of wastewater and other underground facilities.

My written statement represents the national perspective. As a fellow Marylander native, let me take this opportunity to dramatize the importance of this program for our State.

The current backlog of wastewater needs in Maryland equals $866 million according to the most recent EPA data. If you fully appropriate the funding authorized by the Clean Water Act over the next 5 years, Maryland's Federal allocation will come to a little over $204 million, roughly one-fourth of our needs. Combined with State and local funding, we can make a significant dent in the continuing cleanup of our State's polluted waters.

Nationally and locally, the EPA's wastewater treatment programs enjoy enormous popularity because they are directly tied to the economic and environmental benefits. The economy in the city of Baltimore is on the upswing because of new construction and rehabilitation of our major transportation and port facilities.

Less noticeable, but equally important, is the investment in the wastewater treatment facilities. Without those public capital expenditures business, commercial and housing expansion would not have occurred.

The Chesapeake Bay is one of the most important water resources in our State. Wastewater discharge and agricultural and urban runoff from the areas surrounding the bay are the primary sources of excess phosphorus and nitrogen that cause oxygen depletion of the bay's bottom waters.

You and I know that the bay's pollution is interstate in nature. The conventional EPA construction grants program is scheduled for a phase-out this year at $1.2 billion authorization. States are gearing up for revolving loan fund programs to help local governments finance water treatment facilities. Every dollar is needed to capitalize the State revolving funds at this crucial transition.

In summary, we just urge that Congress and the President appropriate EPA's wastewater treatment plants program at the $2.4 billion level.

I made it.

Senator MIKULSKI. You certainly did, Mr. Matricciani. Your company, is that the one that Guy Matricciani——

Mr. MATRICCIANI. He's my father.

Senator MIKULSKI. Well, we know your family very well, and we thank you for your excellent testimony. Believe me, many members of my subcommittee, along with myself, concur with your analysis. We are just going to need all the help we can get in terms of getting our allocation.

Mr. **Matricciani**. You have our support. I would like to, if I may briefly, this is our 25th anniversary, and as a fellow Marylander and my Senator, I would like to present you with an anniversary pin from our association.

Senator **Mikulski**. Oh, great. So does that mean that you and I are pinned? [Laughter.]

Mr. **Matricciani**. Thank you very kindly.

Senator **Mikulski**. Thank you.

[The statement follows:]

STATEMENT OF JAY MATRICCIANI

It my pleasure today to testify before your Subcommittee on the Environmental Protection Agency's (EPA) construction grants program for wastewater treatment systems. I represent the National Utility Contractors Association (NUCA) as President of a national 2,000 member organization of contractors, suppliers and manufacturers of wastewater, water, and other underground facilities. My Presidency is only a part-time volunteer position. Most of my time is spent in Baltimore, Maryland helping to run a third generation family construction business.

"Some of our best work is underground," is a common expression in our business. Many of our members have traditionally specialized in the installation of sewer systems and other underground facilities that reap enormous economic and environmental benefits. For years, we have built wastewater systems at the municipal level that were financially assisted through the help of EPA's construction grants program. Even though significant progress was achieved through a sizable federal investment over nearly two decades, there remains over $83.5 billion in unmet needs. That monetary shortfall represents only the minimum investment required for secondary wastewater discharge standards. More costly advanced technologies could help improve water quality even further.

Wastewater treatment needs are not just dollars and cents. The Clean Water Act was founded upon two simple goals: to make the rivers, streams, lakes and contiguous ocean areas fishable and swimmable. You are aware that the Potomac River, for example, is fishable but more is needed to make that waterway swimmable. The Potomac River and other tributaries feed into the Chesapeake Bay. Wastewater dischrages and agricultural and urban runoff from areas surrounding the Bay are the primary sources of excess phosphorus and nitrogen that cause oxygen depletion of the Bay's bottom waters.

Water pollution problems still exist nationally whether its in the Boston Harbor, the Great Lakes or Long Island Sound. We have made significant progress, but much still remains to be done. Today, we have the technology necessary to prevent environmental pollution from municipal discharges; the construction and design capacity are there to get the job done. The major obstacle is the adequate commitment of public financial resources.

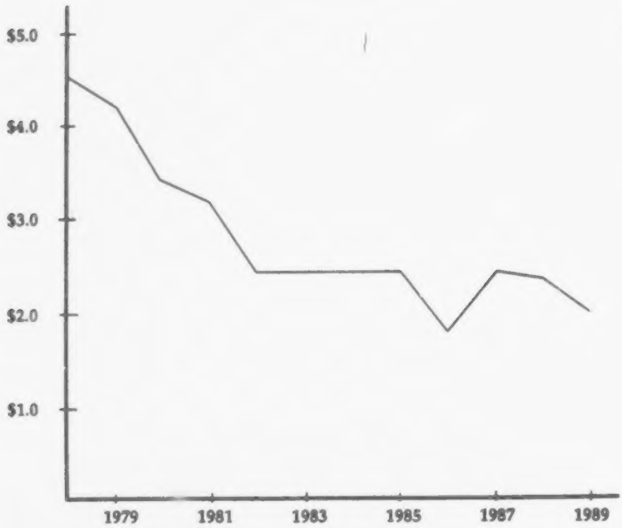
Without adequate water and sewer support systems, communities have to impose moritoriums on growth. Housing cannot be built nor can businesses grow and flourish without municipal wastewater treatment plant capacity. Increasingly, local governments throughout the country are resorting to impact fees to pay for the roads, schools, water treatment plants, police, fire protection, parks and the rest of the community infrastructure needed to service new residential and commercial development. A national survey conducted by Florida State University found that impact fees for sewers were more than three times as common as the combined total of fees for parks and fire facilities.

Although builders technically pay the fees in order to secure their building permits, the cost is invariably passed on to consumers in the form of higher prices charged for new homes or commercial/industrial areas. However, controversial impact fees are only a local financing option for new growth in areas that can afford them. The backlog of current needs for documented facilities are $67.9 billion for the 1988 population, and these cannot be addressed with impact fees.

Our sector of the construction industry has a difficult time understanding why a successful federal program is the constant target of further cutbacks. The Clean Water Act authorizes a $2.4 billion level for the next fiscal year. Yet, the President is requesting only half that amount. In 1978, the federal government appropriated $4.5 billion compared to $1.95 billion for Fiscal Year 1989. Hasn't this program done its fair share to reduce the federal deficit?

EPA CONSTRUCTION GRANT PROGRAM BUDGET CUTS

(billions of dollars)



Moreover, the EPA program that funds the construction of wastewater treatment facilities is entering a critical phase in the implementation of an innovative infrastructure financing mechanism. The President requested only $800 million of an authorized $1.2 billion for capitalization grants for state revolving loan funds (SRF's). Under the new program, states would receive capitalization grants to establish and maintain state revolving funds. Municipalities would apply for loans from SRF's for 100% of the construction costs for wastewater treatment facilities. Local government repayments to the SRF would generate revenues for new loans in order to make SRF's self-sufficient.

The SRF program is at a critical stage. The conventional construction grant program is scheduled for a phase-out this year at a $1.2 billion authorization level. (The President requested only $400 million). If an innovative financing program such as the SRF approach is to be accepted by state and local governments, Congress must meet its fiscal promises under the Clean Water Act.

EPA Wastewater Treatment Funding Comparison
For Fiscal Year 1990
(billions of dollars)

	Authorization	President's Proposal
Construction Grants	$1.2	$.4
SRF's	1.2	.8
TOTAL	$2.4	$1.2

In summary, NUCA strongly urges Congress and the President to fully appropriate EPA's wastewater treatment plants program at $2.4 billion in FY 1990.

STATEMENT OF DR. PHILIP A. BROMBERG ON BEHALF OF THE AMERICAN LUNG ASSOCIATION AND THE AMERICAN THORACIC SOCIETY

EPA'S AIR PROGRAM

Senator **Mikulski**. Dr. Bromberg.

Dr. **Bromberg**. Thank you, Senator.

I am Philip Bromberg. I'm a professor of medicine at the University of North Carolina School of Medicine in Chapel Hill. I also am director of the Center for Environmental Medicine in that school, and I appreciate the opportunity to comment on behalf of the American Lung Association on the proposed fiscal year 1990 appropriation for the EPA.

My comments will focus on the agency's air program and particularly the research and development component within this program.

There are 150 million Americans who live in areas of nonattainment of the ozone and carbon monoxide national ambient air quality standards mandated in the Clean Air Act.

Senators Cranston and Wilson appeared earlier today before this subcommittee to request your consideration of support to deal with the serious ozone pollution situation in San Joaquin Valley.

The Lung Association urges the subcommittee to provide a 15 percent increase in the air program budget over the current level, and that would be about $13 million more than what the President has proposed.

Over the years, the EPA air program has sustained significant budget reductions in important program initiatives. In particular as the agency has shifted resources within its air program to deal with important problems, such as stratospheric ozone depletion and global warming, it has sharply depleted funding for research on health effects of ambient air pollutants, and we continue to pay for this lack of foresight as the prevailing nationwide nonattainment problem for the criteria air pollutants exposes citizens who have little choice about the air they must breath.

The stratospheric ozone deletion and global warming trends will aggravate the extent of the air quality problems encountered at ground level at the present time.

The proposed budget increases for the air program are desperately needed and welcomed by the Lung Association but, unfortunately, may well be insufficient to deal with the accumulation of health effects research needs that is the legacy of years of neglect.

The ALA is prepared to provide information to the subcommittee in its deliberations on these issues that will have a critical impact on the public health.

Thank you.

VETERANS ADMINISTRATION RESEARCH

Senator **Mikulski**. Did you want to make a comment about VA research?

Dr. **Bromberg**. Yes; again, we think that the VA research program, and we focus again on the lung disease research program, but in general we think that has been a very productive program that has produced very meaningful research and has strengthened the clinical care programs especially at the various VA medical centers and nationwide.

We were very pleased that last year the subcommittee saw fit to support that research effort, and we hope that the same thing will be true this year.

Senator **Mikulski**. Thank you. I wanted to make sure you had the opportunity to comment on veterans' needs.

[The statement follows:]

STATEMENT OF DR. PHILIP A. BROMBERG

Mr. Chairman and Members of the Subcommittee, I am Dr. Philip Bromberg, Director of the School of Medicine Center for Environmental Medicine at the University of North Carolina. On behalf of the American Lung Association and its medical section, the American Thoracic Society, I appreciate the opportunity to comment on the proposed Fiscal Year 1990 appropriation for the Environmental Protection Agency. ALA's comments will focus on the Agency's Air Program, and the Research and Development component within this program. In addition, the Veterans Administration's lung disease research activities are of concern to ALA, and I will also be discussing the FY 90 appropriation in this area. The subcommittee demonstrated insight last year in increasing the VA Medical Research budget, and we would urge serious consideration of continuing to provide adequate resources for this often overlooked area.

The Environmental Protection Agency

Last year at the time of my appearance before the subcommittee, over 60 areas of the United States remained in nonattainment of ozone and carbon monoxide as mandated in the Clean Air Act. The nonattainment status of these communities throughout the nation has jeopardized the health of over 150 million people living in these areas. Unfortunately, this situation has not changed significantly as we assess the current status. The American Lung Association urges the Subcommittee to provide a 15% increase in the Air Program budget over the current services level. This increase, which is well below inflation, would nonetheless, provide a minimum level of additional funds for such essential initiatives as Research and Development. The protracted problem of air pollution continues to pose a significant public health threat to millions of Americans. This nation can ill-afford to continue the pattern of providing inadequate resources to address this problem.

A recent study by the American Lung Association, released in January of this year, presented alarming data which demonstrate that progress in addressing the pervasive air pollution threat in this country remains tenuous at best. The study, "Breath in Danger," which I would commend to members of the subcommittee who may not have reviewed its contents, estimates populations at particular risk using Environmental Protection Agency (EPA) data for 487 communities that have failed to attain National Ambient Air Quality Standards (NAAQS). An estimated 146 million Americans, representing approximately 60.5% of the resident U.S. population, reside in these communities.

Segments of the population cited as particularly vulnerable to the effects of air pollution include the elderly, pediatric and adult asthmatics, people with chronic obstructive pulmonary disease (COPD), and children under the age of 13. Moreover, human exposure to the six "criteria" air pollutants, for which EPA sets standards costs an estimated tens of billions of dollars annually. The Air Program budget, a significant source of funding to address the pervasive air pollution problem, thus, must be, at minimum, protected from continuing erosion. The ALA recommendations for the FY 90 EPA Air Program and selected components within this program are presented in the following table.

	Presidents Proposal (in millions)	Current Estimate (in millions)	ALA Rec. (in millions)
Air Program	$ 295.4	$ 268.4	$ 308.7
State Grants (Air Quality Mgmt.)	99.7	101.5	116.7
Regional Monitoring & AQ Mgmt.	17.4	16.6	19.1

Air Program Budget

The allocation for the Air Program continues to represent a very small portion of the overall EPA budget - approximately 6%. The President's request does provide for a 10% increase over the current services budget for the Air Program. While this request does represent a welcome change, it continues to fall below what is needed to address the continuing and pervasive air pollution problem faced by this country. For many years, resources allocated to this area have failed dismally to keep pace with inflation.

While considering the continuing problem of the federal budget deficits, and recognizing that spending in some areas must be curtailed or held at current levels, the ALA must stand by its recommendation of a 15% increase in the Air Program budget over the current estimate levels. This recommended level of $308.7 million, we believe is conservative if the Agency is to work effectively toward the goal of assuring healthful air quality throughout the United States.

o Research and Development

The ALA/ATS lauds the Administration's recommended 21.9% increase in the Air Program's Research and Development budget. This amount would provide approximately $84.2 million for FY 90. We would urge the subcommittee to protect this proposed level of funding to support an aggressive Research and Development program, particularly in the area of Health Effects Research, and ensure continuity in meeting primary program objectives.

Within the Research and Development budget, the Administration has also seen fit to provide a 28.5% increase in the Air Quality Planning and Standards Program. ALA supports this request of $24.8 million and urges the subcommittee to support it as well.

The President has recommended a slight decrease in the funding for the Air Quality Management State Grants program. ALA would recommend a 15% increase over the current services level for this initiative, bringing the funding level to $116.7 million. Increases in this area are needed to assist states in complying with the Clean Air Act mandate for ozone, carbon monoxide and PM10 standards.

The ALA/ATS is very pleased that the President's recommendations for both Mobile and Stationary Source Enforcement provide for 25% and 22% increases, respectively, over the current estimate levels. The Administration's proposed level of funding would provide $9.5 million for Mobile Source Enforcement, and $84.4 million for Stationary Source Enforcement.

Last year, when we appeared before the subcommittee, the ALA/ATS had released an extensive study which concluded that in effect, the percentage contribution from mobile sources to total emissions, with the important exception of lead, had not changed appreciably in spite of significant passenger car emission controls. This Report, entitled, "Pollution on

Wheels: The Need For More Stringent Controls on Hydrocarbons and Nitrogen Oxides To Attain Healthy Ozone Levels Across the U.S.," was reviewed by most members of the subcommittee, and as you will recall, made a strong case for the need to mandate significant additional reductions in emissions from mobile sources.

This year, the ALA has recently released a report entitled, "Why NOX? The Costs, Consequences and Control of Nitrogen Oxides in the Human and Natural Environment." This Report concludes, among other things that, this nation's smog clean-up program is stalled due to its failure to control oxides of nitrogen (NOx), created by the combustion of fuel. I would commend this report to those members of the subcommittee who have not had the opportunity to review it. The ALA, in presenting this Report, has urged the nation to shift its clean air program toward greater control of NOx, the least controlled of all common air pollutants. The Report pointed out that, while advanced NOx controls are required on power plants and other major NOx sources around the world, control programs in the United States have lagged significantly behind those of West Germany, Japan and other nations. Notwithstanding this lack of progress, NOx pollution is expected to increase in this country by 50 percent over the next 20 to 30 years.

Members of the subcommittee should be aware that NOx is an essential precursor not only for O3 generation in the atmosphere, but also for generation of nitric acid vapor and nitric acid dissolved in water droplets. Furthermore, NOx itself has been implicated in adverse effects on respiratory health in children. The ALA Report labeled NOx "an essential ingredient -- often the essential ingredient -- of virtually every major air pollution problem, including ozone (smog), particulate matter, acid rain and global warming of the atmosphere."

A final initiative which ALA/ATS supports is the university-based research and education program and worker training program at the Natonal Institute of Environmental Health Sciences (NIEHS) established in the Superfund Amendments and Reauthorization Act of 1986 (SARA). Continuation of this multiproject, interdisciplinary program which facilitates the joint efforts of scientists in various fields in studying environmental hazards and their effects on human health remains essential. The Administration has requested $11.9 million for these programs. This amount appears to be inadequate to fund ongoing research and meet commitments that were made to grantees for fiscal year 1990. In 1988,the NIEHS Superfund basic research program accepted and submitted for peer review a number of research proposals. There is a need for at least $20 million to fund the best of these proposals. ALA/ATS would support a funding level of $20 million, an amount which is $10 million less than the $30 million authorized level.

In concluding this portion of my testimony, I must reiterate that the Administration's budget, for the most part, offers some stability for funding in several critical Air Program areas. Over the years, the EPA Air Program has sustained significant budget reductions in the face of increasing program needs. We continue to pay the cost for this severe lack of foresight as the prevailing nationwide nonattainment of air quality standards remains a significant public health threat to millions of residents throughout the United States. While the President's budget is certainly not all that we would want, it represents some commitment to protecting such initiatives as the Mobile and Stationary Source Enforcement programs and at least maintaining minimum funding levels to facilitate progress in improving the public health status of those particularly vulnerable to the effects of air pollution, and the general population as well. In those areas where ALA has recommended more realistic levels of funding, the organization stands ready to assist the subcommittee as further deliberations ensue.

The Veterans Administration

I would like to turn now to the Veterans Administration's FY 90 budget request from the President. I will briefly address several areas of concern to the American Lung Association.

Mr. Chairman and members of the Subcommittee, the investment in medical research made by the Veteran's Administration is among the best and most productive in the entire federal budget. With the limited resources made available to VA career researchers, there has been an amazing track record of discovery and accomplishment. VA researchers over the years have been bestowed with the most prestigious scientific honors such as the Nobel Prize and the Lasker Foundation's Basic Medical Research Award. The clinical nature of VA Medical Research has led to key progress in the areas of treatment for prostate cancer, heart disease, chronic obstructive pulmonary disease. These common disorders impact not only our nation's Veterans, but our entire population.

Specific projects being conducted with respect to pulmonary disease are:

o A study at the Pittsburgh Veteran's Administration Medical Center is on the inflammation and fibrogenesis in experimental silicone. These studies are important in that they demonstrate the silicosis regulatory functions of the alveolar macrophage in the pathogenesis of silica induced lung inflammation and fibrosis, and provide insights into the causes of pulmonary fibrosis unrelated to silica exposure.

o At the Miami Veteran's Administration Medical Center, the metabolic and cellular basis of normal lung function and of response to acute lung injury is being studied. As the specific cellular effects of bacterial endotoxin become better understood, it appears likely that pharmacological interventions can be devised to prevent the syndrome of severe diffuse lung injury and decrease the need for intensive care unit use for such patients.

o The Memphis Veteran's Administration Medical Center is studying the role of oxidants in the pathogenesis of emphysema. Cigarette smoking probably causes emphysema due to an accumulation of phagocyte derived elastases within the lower airways of the lung. Identification of the responsible proteases is important because it may then allow the development of specific inhibitors which could be used clinically to prevent progress of the emphysema.

An excerpt from a document prepared by the "Friends of VA Medical Care and Health Research." I think it very succinctly demonstrates the unique research and clinical benefits of the VA Medical Research program:

"When I went for my annual checkup in 1986, my doctor discovered that I had lung cancer. He told me that there was no treatment for the disease and that I probably had only a few months to live. I had never gone to the VA medical care but decided to go to the San Antonio VA hospital to see if the doctors there could help me. I was enrolled in a special research program that was testing new cancer drugs. The doctors explained that the drugs might not help me but that through the research they might learn how to help other lung cancer patients. Still, the drugs do seem to help. Two years after being told that I had two months to live, I am doing pretty well. I believe that I wouldn't be here today without the doctors and nurses at the San Antonio VA cancer research program."

This statement was submitted by Elsy Bishop of San Antonio, Texas. Mr. Bishop served in the Army in the Pacific from 1942 until he was wounded in 1945.

It is not conceivable that the President's FY 90 budget proposal would recommend a reduction in the VA research program, but it does. The vital nature of this modest but productive cornerstone of the overall VA health care system should be supported more vigorously. The American Lung Association/American Thoracic Society recommends an overall appropriation of $290.1 million for medical research at the VA. Moreover, the ALA/ATS recommends $10.8 million and $22.0 million for Health Services Research, and Rehabilitation Research, respectively. These amounts represent a 15% increase over the current estimates.

Let me close by reiterating that the American Lung Association remains willing to assist the Subcommittee as it considers requests for increases in the Veterans Administration's Medical Research budget.

STATEMENT OF EDWARD S. KRESS, PRESIDENT OF THE KRESS CORP.

COKE OVEN POLLUTION ELIMINATED

Senator Mikulski. Mr. Kress, president of the Kress Corp.

Mr. Kress. Thank you, Senator. We appreciate your time.

We are a small company. We have 120 people. We have made very innovative equipment for the steel, mining, and earthmoving industries over the last 20 years. We have come up with this new technology that eliminates all pollution on pushing and quenching for the coke ovens. We are working at the moment with Bethlehem Steel and are hoping that we can get a program going.

At the moment, it looks like if we have full market penetration that we can have a reduction of 9,000 tons of particulate matter each year and 30,000 tons of sulphur dioxide. We will also take reductions in benzene and other particulate matter.

Also, back at the coal mines we'll be able to reduce quite a bit of the pollution because with the energy savings we expect to save 45 trillion BTU's annually or approximately 2 million tons of coal. If this system is not forthcoming, there will be no foreseeable elimination of quenching emissions in the future.

What we would like to have is a 70 to 30 split between the Government and the private industry.

We appreciate your time.

Thank you very much.

Senator Mikulski. This is a fairly new technology.

Mr. Kress. Yes; but it's a very simple technology. We just push it into a box and we cool the box.

Senator Mikulski. Do you think it will work?

Mr. Kress. We know it works. We have had many pushes and we have a system——

Senator Mikulski. We've got too many pushers, Mr. Kress. [Laughter.]

Mr. Kress. Well, that's what we refer to. We push it into the box and we cool the box. We have had the EPA, they have looked at it and they are very excited about it. It's 100 percent pollution controlled for both pushing and quenching. That's a given.

The problem is that we have to develop the technology to make 140 pushes a day. We think it's quite possible and we are very confident it can be done, but I know it would give everybody a lot of confidence in the system if we did have some help because there might be more bugs that show up, and it would help if we had Government assistance because it's a production problem. It's not an environmental problem. We have to learn to make 140 pushes a day. That's one every 10 minutes, and that's a pretty difficult thing to do, but we are confident we can do it.

Senator MIKULSKI. What would be the ramifications if this works?

Mr. KRESS. Well, first of all, we would eliminate all the pushing of particulate matter. There is 9,000 tons that would be eliminated in the atmosphere. We would also save 30,000 tons of sulfur dioxide. We also have many other phenols and cyanides and ammonias that would not be eliminated.

The one nice thing about this system is that it would be very cost effective if it does work out because we get more coke, we get better coke, and we reduce the pollution.

Senator MIKULSKI. Do you end up with sludge?

Mr. KRESS. We end up with nothing because we never touch the coke with water. In other words, that's the big secret to this, and everybody knows there are extremely expensive dry quench systems that would cost rather than $20 million that we're talking about to develop the whole system and then it will probably be about an $8 million system at a later date.

What we're talking about is that they would probably cost $100 million and it would just be cost prohibitive, plus the fact that with the dry quench systems they degrade the coke so much because of the way they work them. They work the coke down in a silo.

So we will get more coke with our system than with the present system, and much more than the dry quench system and better coke. We have done all this testing in the last 2 years both at Granite City and at Sparrows Point and we are now quite sure that this is right.

Senator MIKULSKI. Thank you for your comments.

[The statement follows:]

STATEMENT OF EDWARD S. KRESS

MADAM CHAIRWOMAN AND MEMBERS OF THE SUBCOMMITTEE -- THANK YOU FOR ALLOWING ME TO APPEAR BEFORE YOU. MY NAME IS EDWARD KRESS AND I AM PRESIDENT OF THE KRESS CORPORATION LOCATED IN BRIMFIELD, ILLINOIS, JUST OUTSIDE OF PEORIA. THE KRESS CORPORATION SPECIALIZES IN THE DESIGN, ENGINEERING AND FABRICATION OF MATERIAL HANDLING EQUIPMENT FOR USE IN INDUSTRIES SUCH AS STEEL, MINING AND EARTHMOVING. OUR CORPORATION HAS BEEN IN EXISTENCE SINCE 1965 AND EMPLOYS 120 PEOPLE. OVER THE YEARS, WE HAVE DEVELOPED INNOVATIVE EQUIPMENT FOR THE MARKETS WE SERVE.

IN THE STEEL INDUSTRY, AN INTEGRATED STEEL PLANT STARTS WITH RAW MATERIALS SUCH AS COAL AND IRON ORE IN ORDER TO PRODUCE FINISHED STEEL PRODUCTS. ONE ELEMENT IN THE OVERALL PROCESS IS THE COKING PROCESS WHICH CONVERTS BITUMINOUS COAL INTO COKE FOR USE IN THE BLAST FURNACE AS BOTH A FUEL AND A REDUCING AGENT.

THE COKING PROCESS INCLUDES HEATING COAL TO APPROXIMATELY 1,800 DEGREES FAHRENHEIT IN OVENS RANGING IN SIZE FROM 10 TO 20 FEET HIGH, 40 TO 50 FEET LONG, AND 18 INCHES WIDE. THE COKE IS REMOVED FROM THE OVENS EVERY 20 HOURS OR SO BY "PUSHING" THE COKE INTO A SPECIAL RAIL CAR. THE TEMPERATURE OF THE INCANDESCENT COKE IS REDUCED BY QUENCHING IT WITH 10,000 TO 15,000 GALLONS OF WATER. DURING THE PUSHING AND QUENCHING PROCESS BOTH PARTICULATE MATTER AND SULPHUR DIOXIDE ARE EMITTED TO THE ENVIRONMENT. ALSO DURING THE PROCESS OF PUSHING AND QUENCHING, THE COKE IS SUBJECT TO BREAKAGE, DEGRADATION AND INCONSISTENT SIZING. BLAST FURNACES REQUIRE COKE OF A CERTAIN STRENGTH AND SIZE AND -- BECAUSE OF THE ABOVE-MENTIONED PROBLEMS -- MORE COAL IS PROCESSED INTO COKE THAN IS NECESSARY TO PRODUCE THE REQUIRED IRON.

WE AT KRESS ARE DEVELOPING (USING ALL DOMESTIC ENGINEERING, LABOR, AND EQUIPMENT) THE KIDC^{R} OR THE KRESS INDIRECT DRY COOLING SYSTEM. OUR SYSTEM RETAINS THE INTEGRITY OF THE COKE, DOES NOT REQUIRE WATER QUENCHING, AND PRODUCES MORE STABLE AND CONSISTENTLY-SIZED COKE. FROM AN ENVIRONMENTAL STANDPOINT IT EFFECTIVELY ELIMINATES ALL PUSHING EMISSIONS. THEREFORE, VERY LITTLE PARTICULATE MATTER ENTERS THE ATMOSPHERE. IN ADDITION, BECAUSE THE COKE DOES NOT REQUIRE WATER QUENCHING, THE AMOUNT OF SULPHUR DIOXIDE AND OTHER POLLUTANTS EMITTED TO THE ATMOSPHERE IS ELIMINATED.

WITH RESPECT TO ENVIRONMENTAL IMPROVEMENTS, THERE WILL BE WASTE REDUCTION BENEFITS AS A RESULT OF OUR SYSTEM. ANNUAL SAVINGS HAVE BEEN ESTIMATED TO BE -- 500,000 TONS OF WASTE MATERIAL AT THE COAL MINE AND 9,000 TONS OF PARTICULATE MATTER, 30,000 TONS OF SULPHUR DIOXIDE, AND 200 TONS OF BENZENE AT THE COKE OVENS. EMISSIONS OF PHENOL, CYANIDE, AND AMMONIA WHICH WOULD NO LONGER BE RELEASED. IN ADDITION, THERE ARE ENERGY SAVINGS. WE ESTIMATE THAT OUR SYSTEM, WHEN IT ACHIEVES FULL MARKET PENETRATION, WILL CONSERVE APPROXIMATELY FORTY-FIVE TRILLION BTU'S ANNUALLY OR THE EQUIVALENT OF TWO MILLION TONS OF COAL.

TO DATE, WE HAVE TESTED OUR TECHNOLOGY UNDER CONTROLLED CONDITIONS AND FOUND VERY PROMISING RESULTS. HOWEVER, IT HAS NEVER BEEN TESTED UNDER ACTUAL OPERATING CONDITIONS OR FOR SUSTAINED PERIODS OF TIME. MUCH REMAINS BEFORE WE CAN FULLY REALIZE THE TECHNOLOGY'S POTENTIAL.

CURRENTLY BETHLEHEM STEEL CORPORATION IS UPGRADING ONE OF ITS COKE OVEN PUSHING EMISSION SYSTEMS. IT IS VERY INTERESTED IN THE KIDC^{R} SYSTEM BUT AS COULD BE EXPECTED, HAS QUESTIONS RELATING TO THE NEW TECHNOLOGY. HOWEVER, THE COMPANY IS PROCEEDING WITH PLANS FOR A FULL SCALE PROJECT USING OUR SYSTEM. IF THE PROJECT IS NOT SUCCESSFUL AN ALTERNATIVE CURRENT TECHNOLOGY, EITHER HOOD OR SHED, WOULD BE SUBSTITUTED.

SINCE THE PROPOSED PROJECT HAS SIGNIFICANT NATIONAL BENEFITS A GOVERNMENT/INDUSTRY PARTNERSHIP IS APPROPRIATE. KRESS AND BETHLEHEM ARE PROPOSING A RISK MINIMIZING EPA/INDUSTRY COST SHARING PROGRAM THAT WILL SIGNIFICANTLY HELP TO LAUNCH THIS TECHNOLOGY AND PERMIT FASTER COMMERCIALIZATION. THE DETAILS OF THE PROGRAM WOULD BE DEVELOPED ALONG THE FOLLOWING LINES:

PRIVATE INDUSTRY	70%
EPA	30%

THE AMOUNT OF GOVERNMENT FUNDS WOULD TOTAL $6.5 MILLION DURING FISCAL YEARS 1990 AND 1991. AN APPROPRIATION OF APPROXIMATELY $3 MILLION IS BEING REQUESTED FOR FISCAL YEAR 1990.

BEING A PARTICIPANT EPA WOULD HAVE ACCESS TO ALL DESIGN, OPERATIONAL AND TEST DATA.

WE HAVE REVIEWED THIS TECHNOLOGY WITH EPA'S ENVIRONMENTAL ENGINEERING AND TECHNOLOGY DEMONSTRATION OFFICE AND THE AIR AND ENERGY ENGINEERING RESEARCH LABORATORY AT RESEARCH TRIANGLE PARK, NORTH CAROLINA. THEY BELIEVE THAT OUR TECHNOLOGY IS A POTENTIALLY IMPORTANT POLLUTION PREVENTION SYSTEM.

IF THE TECHNOLOGY PROVES SUCCESSFUL THERE WOULD BE OPPORTUNITY FOR IT TO BE INSTALLED EVENTUALLY IN APPROXIMATELY 30 DOMESTIC COKE OVEN OPERATIONS LOCATED IN 12 STATES -- THE LARGEST CONCENTRATION BEING ALABAMA, INDIANA, OHIO AND PENNSYLVANIA. THIS TECHNOLOGY, WE BELIEVE, IS THE NEXT GENERATION OF PUSHING EMISSION CONTROL SYSTEMS WHICH COMBINE ENVIRONMENTAL, ENERGY AND OPERATING BENEFITS.

SUMMARY

SENATORS, I WANT TO ALERT ALL OF YOU TO THE HUGE RISKS IN CAPITAL INVESTMENTS AND MANUFACTURING COSTS A STEEL COMPANY MUST ASSUME TO INTEGRATE THIS TECHNOLOGY INTO ONE OF ITS PLANTS. IN THE PAST YEAR, WE HAVE BEEN WORKING TO IMPROVE OUR PROCESS. DURING THAT ONE YEAR PERIOD, OUR SYSTEM HAS ACCEPTED ONLY 40 COKE OVEN BATTERY PUSHES. A NORMAL COKE OVEN BATTERY PUSHES 120-140 OVENS PER DAY! WITHOUT COKE PRODUCTION KEEPING PACE WITH CAPACITY NEEDS, THE PLANT WOULD SUFFER SIGNIFICANT PENALTIES -- PLUS LOSE CUSTOMERS BECAUSE OF SERVICE. TO BECOME MORE COMPETITIVE INTERNATIONALLY, WE MUST SATISFY ENVIRONMENTAL, ENERGY AND ECONOMIC GOALS. WE NEED YOUR SUPPORT TO ENCOURAGE COMPANIES TO TRY INNOVATIVE APPROACHES. THIS IS ONE OF THOSE OPPORTUNITIES!

THANK YOU FOR PROVIDING ME THE OPPORTUNITY TO APPEAR BEFORE YOU AND I WOULD WELCOME ANY QUESTIONS YOU MAY HAVE.

KRESS INDIRECT DRY COOLING PROJECT

ISSUE

Bethlehem Steel Corporation and the Kress Corporation are pursuing the installation of an innovative coke oven emission pollution prevention technology known as the Kress Indirect Dry Cooling (KIDC) process. The technology offers significant national benefits in terms of a reduction in particulate emissions and energy conservation. Inherent in the application of new technologies are increased risks -- both financial and technical. Since this technology offers significant national benefits, sharing of these risks through joint industry/government project is appropriate.

BACKGROUND

The domestic steel/coke industry produces between 25-28 million tons of coke annually. During the pushing of hot coke from the oven to a quench car, significant quantities of particulate matter are released to the atmosphere. This particulate matter is of concern to both the industry and EPA. Currently available pushing emission technologies -- sheds, hoods, and a special type of quench car -- are expensive to install and operate and, more importantly, achieve less reduction than the proposed system.

KIDC is expected to achieve a major breakthrough by effectively eliminating all of the pushing emissions and all of the quenching emissions.

DISCUSSION

KIDC captures the hot coke prior to exposure to the atmosphere and cools the product in a totally closed environment. When installed, the system will be the first of its kind in the world. KIDC has been under development for the past 11 years. It is now ready for full scale installation and demonstration at Bethlehem Steel Corporation's Sparrows Point, Maryland Plant.

The Plant needs to reduce pushing emissions on two coke oven batteries. The state of Maryland's Department of Environment has approved the KIDC technology based upon their observation of a prototype which successfully accepted several coke oven pushes with environmentally desirable results. To date the prototype has made approximately 40 pushes. However, the system must be capable of accepting up to 50,000 pushes annually. In addition, a research program is being proposed to document the benefits of this system. This research will be shared with the rest of the domestic steel industry.

Bethlehem and Kress representatives have discussed this project with several governmental offices including EPA's Air and Energy Laboratory. It is our understanding that EPA believes this is a potentially important pollution prevention technology worthy of further consideration.

The KIDC system, assuming full market penetration, has the potential to annually reduce pollution of: particulate matter, 9,000 tons; benzene, 1,145 tons; and sulfur dioxide, 40,000 tons. In addition, the equivalent of 45 trillion Btu's can be saved on an annual basis.

RECOMMENDATION

Since the proposed project has significant national benefits a government/industry partnership is appropriate. The details of a cost shared program must be developed. However, a 70% industry, 30% government cost sharing split is recommended. The amount of government funds would total $6.5 million during fiscal years 1990 and 1991. An appropriation of approximately $3 million is being requested for FY90.

STATEMENT OF DR. BARBARA L. BEDFORD, NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES

EPA'S LONG-TERM RESEARCH BUDGET

Senator **Mikulski**. Dr. Bedford from the Land-Grant Colleges.

Dr. **Bedford**. Thank you, Senator Mikulski.

Dr. Weinstein and I represent the National Association of State Universities and Land-Grant Colleges. Our concern is with EPA's long-term research budget for environmental problems.

I'm going to make three points.

First, is that there is a need for the center's program in addition to the funding for the individual investigator-initiated grants program.

Second, that the center's program needs to be funded at a minimum level of $1 million annually, and probably more like $2 million annually in order to be effective.

Third, that we support a reorganization of the existing center's program. The details of that reorganization I'll leave for the written testimony.

As you know, the concern of our association is with EPA's funding and, as you also know, EPA's research funding has eroded seriously since the 1981 high to a 1988 low.

Ms. Elgic last year testified that there should be an increase in that funding, and, in fact, we have seen some increase for the grants program, but that's only one-half of the equation for the kinds of environmental problems we are now facing. The other one-half is what is called the Centers of Excellence Program.

Now, that program was initiated in 1979 in order to give EPA a long-term research base in order to train scientists to do research on long-term environmental problems and not be so subject to shotgun approaches to short-term changing of agenda and to changing the topics from one 6-month period to the other.

Now H.L. Mencken once said that for every scientific problem there is a simple answer and it's wrong. I'm sure you are aware of the kinds of environmental problems we are now facing, global climate change, ozone depletion, ground ozone levels, crop losses, acid deposition, and loss of biological diversity.

NEED FOR CENTERS' FUNDING

These are complex problems and they require centers with long-term staff thinking over long periods of time about these problems and bringing information together. The major differences between a center program and a grants program is that the centers attempt to integrate and synthesize information rather than focusing on a single grant. A single grant is given to address a single question. The centers try to bring the results from several programs together and keep a continuum and build up an intellectual capital.

The funding for the centers has never been adequate. It was intended to be $1 million. It was initially slashed to $500,000, and we are still at that level 8 years later. If we just took the GNP gross, the deflator, we ought to be funded just for parity at $767,000. So you can see that there is a great erosion in the program and the program has a limited potential.

Because of the decreases in funding, the centers have not been as effective as they could be, and we argue that they should continue to be supported and their funding increased.

Senator MIKULSKI. Thank you. Dr. Bedford, are these centers really buildings or are they more networks?

CONSORTIUM APPROACH

Dr. BEDFORD. They are networks. In fact, the intent was to build on the expertise existing in universities already. So in no case are we talking about a free-standing building, and in all cases that I know of we are talking about several departments within one university or in a couple of the cases several universities that form a consortium to address a particular problem.

Senator MIKULSKI. But why do we have to fund that? Why doesn't a university just do that to maximize research and intellectual productivity?

Dr. BEDFORD. Well, the question that most people ask is, Why doesn't industry fund this.

Senator MIKULSKI. But this is a network at the university in which individual research is going on, as I understand, and that this really funds the mechanism for coordination and hopefully even synergistic thinking.

Dr. BEDFORD. Absolutely. This is a standard research program in the sense that in order to hire the people to do it and to get the funds for equipment, for supplies, to pay the secretarial and administrative staffs, to bring in staff to coordinate particular professors, and to support a post-doctoral graduate student that would work with people in two different departments, you simply need the extra money to do it.

Dr. BEDFORD. Do you wish to comment on that?

Dr. WEINSTEIN. No; you're right.

Senator MIKULSKI. Do you teach, Dr. Bedford?

Dr. BEDFORD. I do.

Senator MIKULSKI. At what departmental level do you teach?

Dr. BEDFORD. I teach at the graduate and undergraduate level in the Department of Natural Resources. I have also taught in the biology and society program and in the section of ecology and systematics.

Senator MIKULSKI. What do you teach undergraduates—I'm trying to understand the way universities work. They are more difficult to understand than the way other governments work.

Dr. BEDFORD. Well, let me take something unusual that I happen to teach, which is a biology and societies course which I taught for the honor's seminar, called The Biologist's Role in Natural Resource Policy. In that course I emphasize part of what I was emphasizing to you, which is that biologists have a responsibility to participate in the process and transfer the information that they acquire to people making the decisions that actually affect the environment. I talk to them about how it is that science operates, how it is that Government operates and why is it that we need to participate in that process. That's one part of what I teach.

I also have taught communities and ecosystems, which was a graduate level course, and in that case we are trying to teach people that the things that we see in the environment really are occurring at very large scales, and yet the techniques that we use tend to be focusing more and more on the cellular and the subcellular level. So we try to focus on higher levels of organization, the community or the ecosystem, because it's the ecosystem, for example, that transforms pollutants. It's the ecosystem that determines whether what comes in one end of the lake goes out the other or is retained in the sediments.

It's those large patterns that we need to understand in order to address some of these bigger questions, and certainly now we are moving to the global scale, and one of the things that is most difficult to teach students is how to extrapolate across scales. They may understand something about an individual organism, but it's harder to get a picture of what that population, say white tail deer or whatever, the rock bass or whatever you're talking about operates in the environment, and more difficult still to say how what we introduce into the environment affects that population or how that population interacts with other populations, and more difficult still to talk to them about relating that to the movement of the pollutants in the environment.

Senator **Mikulski**. Well, obviously you've outlined some classes that I think my staff and I would like to take. [Laughter.]

Dr. **Bedford**. I would be happy to have you.

Senator **Mikulski**. I'll bet you would. [Laughter.]

Let me just tell you the point of the question, and I'm just so glad to hear that you're in the classroom. There is a troublesome thing that keeps coming to this subcommittee, that we hear at the National Science Foundation and so on. All the universities come and they all want research money.

STUDENTS AND TEACHING

I can tell you in my 3 years on this committee, 2 years as a member and 1 year now as a Chair, that I rarely hear anyone talk to me about students and teaching, and particularly at the undergraduate level. You know, our kids, and I'm sure a lot of people around the room even as dads would say the first mortgage our kids have is their student loan program and the nature of the student has changed.

What I find is that some look upon research as the new pork barrel item, that's one thing, and the other is let's go for the glitz and the glory, but you have large numbers of undergraduate students who don't see necessarily an assistant professor, let alone an associate professor or a full professor.

Then we even hear that the researchers now don't even go for the so-called research assistant. They want a post-doctoral student because it's more efficient. Well, we can't get into that.

One of the things of course, and this is not any intellectual thing, but we would hope that the National Association of State Universities and Land-Grant Colleges, special schools, particularly the land-grants, play a special role in our country. I mean, they were original intellectual infrastructure for farmers and other people to get a different kind of education and to move in from the 19th century to the 20th century.

We've now got to take the land-grant college and move it from the 20th century to the 21st century. I happen to think research plays a part in that, but I also happen to think that a big part is teaching.

So I'm just so glad to hear that you're in the classroom, and I would hope that you would encourage the universities and land-grant colleges to remember one of their primary roles. The university is to be a center of learning, but not only to learn about the world, but so that kids learn what they paid to come to find out.

Dr. **BEDFORD**. That's absolutely right, and if I can comment on what you've just said, if I could amplify. Another problem that arises from individual research grants, which I fully support, is that there is no mechanism for bridging those individual stars that you're talking about that don't talk to the students with students and with other departments.

So that the centers override the disciplinary structure in the university that is a strong part of the university, but it doesn't bring together students and people from different departments to discuss these complex problems, and that's what the centers do that these individual grants don't do.

The individual grants are needed, but I think the synthesis and integration is, along with the teaching, very important.

Senator **MIKULSKI**. Thank you.

[The statement follows:]

STATEMENT OF DR. LEONARD H. WEINSTEIN AND DR. BARBARA L. BEDFORD

NASULGC proposes a reorganization of the EPA Centers of Excellence program along the following lines: (1) determine which of the eight existing centers are needed for EPA's mission; (2) beginning in 1991, entertain an open competition for ca. 5 centers, each to exist for a 9-year period; (3) phase in other centers as needed; (4) fund each center at $1 million per year for the first 2 years, increasing to $2 million per year thereafter; (5) provide administrative control through the Office of Exploratory Research.

The National Association of State Universities and Land-Grant Colleges (NASULGC) is vitally concerned with the nature, extent, and levels of funding for EPA's long-term environmental research agenda. As you are no doubt aware, funds available for the Grants and Centers programs steadily eroded from a peak in 1981 to a low in 1988. In testimony of 1988, NASULGC proposed a schedule of increased funding to culminate in 1991 with about $35 million for the investigator-initiated competitive grants program. We are delighted that a plan similar to this has been accepted. But the grants program is only one-half of the equation for a rational approach to developing problems. The other half is the Centers of Excellence program, and with reference to them, Dr. Bernard Goldstein, the former EPA Assistant Administrator for Research and Development said ,"EPA desperately needs a program of this nature. However, it should be recognized by all that there is a threshold of funding which, if not achieved, will not only make the program ineffective but will lead to negative interactions of harm to EPA's mission. I suggest that total funding of the Grants and Centers program, not counting RFA's, be in the range of 15% of EPA's R&D budget."

The environmental and ecological problems of today are too complex and poorly understood for "quick fix" science. H.L. Mencken once said that "For every scientific problem there is a simple answer. And it is wrong." Congressman George Brown stated in 1981 that "part of the answer [to EPA's problem] lies in the realization that while the problems facing EPA indeed exist in the present with terrible urgency, they are likely to be disappointingly similar and just as urgent in the future".

This urgency motivated EPA to establish its Centers of Excellence program in 1979 in order to provide (1) research and training that emphasized long-term environmental problems, (2) forecasting of future problems by focusing and evaluating a large body of basic scientific knowledge, and (3) guidelines regarding the kinds of research needed to evaluate the extent of existing and emerging problems. Eight centers were awarded competitively, each devoted to a different area of research and specialization. The programs are formulated in concert with local and national advisory committees and with the EPA project officer. The mission of the Ecosystems Research Center (ERC), with which we are associated, is to assess and evaluate the state of knowledge of whole biological communities and ecosystems and to investigate its applicability to environmental regulation and management. The primary goals of the Center are to (1) identify fundamental principles and concepts of ecosystems science; (2) determine their importance in understanding and predicting the responses of ecosystems to stress, (3) describe the basic mechanisms that control ecosystem stability; and (4) evaluate the applicability of basic information and concepts to problems of concern to EPA. Several ERC books and monographs have received attention within scientific and regulatory communities: "New Perspectives in Ecotoxicology", "Potential Impacts of Environmental Release of Biotechnology Products: Assessment, Regulation, and Research Needs", "The Hudson River Ecosystem", "Ecotoxicology: Problems and Approach", "Cumulative Effects on Landscape Systems of Wetlands: Scientific Status, Prospects, and Regulatory Perspectives", and others.

EPA's original intention was to fund each Center at $1 million annually. But the streets of Hell are paved with good intentions, and funding was immediately cut in half. Thus, the interest of the hierarchy within the EPA waned before the program could start. Over the intervening years, funding has remained essentially constant. As an example, the Ecosystems Research Center at Cornell University in FY 1989, will receive $540,000, including add-on funding, $40,000 more than was allotted in 1980. Using the GNP price deflator for the period of 1980-1988 of 42%, the funds provided for 1989 of $540,000 should be $767,000 merely to preserve parity. It is fanciful to believe that a core group of scientists able to catalyze research on problems that are international, if not global, can be supported on $540,000. Scientists are scurrying to develop strategies to cope with formidable problems of global warming, increased incidence of ultra violet-B, acidic deposition, toxic wastes, marine pollution, etc. Reactive gases, such as chlorofluorocarbons, are associated with the destruction of the thin veneer of beneficial stratospheric ozone, and the ground-level ozone derived primarily from fuel combustion, destroys crop life each year at a rate of $4-5 billion in economic losses (in 1989 dollars).

Many in government feel that industry will assume the support for much of this extramural, long-term basic research. And, some industries and industrial consortia, such as the Electric Power Research Institute (EPRI), the National Council for Atmosphere and Stream Improvement (NCASI), the Empire State Electric Energy Research Corp. (ESEERCO), and others, have a history of supporting open research based upon quality. But the hope that the bulk of funds for long-term research and training will be assumed by industry is "such stuff as dreams are made on".

There is a need for practical solutions to these problems while developing intellectual capital. Again, Congressman Brown stated that with its limited resources, EPA must forego some short-term research to support long-term programs that are in the long run essential to the success of EPA's mission. The Centers are essential ingredients!

STATEMENT OF BILL FRANK, JR., CHAIRMAN, NORTHWEST FISHERIES COMMISSION

CONFLICT WITH STATE OF WASHINGTON

Senator MIKULSKI. Mr. Frank, I know you're going to speak for the Northwest Indian Fisheries Commission. We welcome your testimony.

Mr. FRANK. Thank you, Madam Chair.

I'll give you a map here that has a number of the tribes.

My name is Bill Frank, Jr., and I represent the Northwest Indian Fish Commission. I represent the 20-plus tribes as you see on that map there in the State of Washington.

This is the 100th birthday of the State of Washington, the centennial year, and we have been in conflict with the State of Washington for the 100 years, up until 1974 when we brought out lawsuit against the State of Washington, *United States* versus *Washington*, and won that lawsuit. It was confirmed by the U.S. Supreme Court in 1979, and now we are comanagers of the State of Washington on the resource of the salmon.

We are all salmon people up there, and we see a void now in the environmental part of our management. We manage all those rivers and watersheds in the State of Washington along with the State of Washington and the Federal Government, and we have treaties with the United States.

So I would like to take just a minute to introduce Jim Anderson, our director, and have him comment on some specific things, please.

STATEMENT OF JIM ANDERSON, EXECUTIVE DIRECTOR, NORTHWEST FISHERIES COMMISSION

ADDITIONAL RESOURCES SOUGHT

Mr. ANDERSON. Thank you for the opportunity to be here, too.

Billy gave you a little bit of the who and the where. I would like to in a nutshell give you some of whys, whats, and hows of what we are suggesting.

We are looking to the EPA for additional resources to assist us in implementation of our environmental agenda which has been upheld by the court systems and is acknowledged clearly in the treaties.

We need additional moneys to the tribes. We are looking for additional emphasis within the agency for their Indian policy. There is a very good policy, but it's hollow. There are no resources behind it and there is no emphasis within the agency.

We are looking for off reservation assistance to us so that the tribes can manage those streams which oftentimes are off the reservation, but where the fishery moves up. So we need to have that opportunity.

We are looking for additional flexibility within EPA, whether that's going to require authorization from the other committees, we don't know yet, but that's what we're trying to explore.

What will we do? We need to be involved in monitoring and evaluating practices. We need to build the infrastructure at the tribes so that we can do this properly. We need to assess the needs both on and off reservation to allow us to more adequately participate in the EPA programs in general.

We would suggest that funds be somehow earmarked with some kind of appropriate language that does provide for increased tribal participation. We realize it may have to come over a period of time, and we know the budget considerations, but we are working diligently in the Northwest with the State and with the Federal Government.

We are part of a process that is the analogy of the three-legged stool, and we have to be funded so that we can participate appropriately, and we have a lot of support from the State and from the Federal Government in general.

Senator MIKULSKI. I understand. My question to either Mr. Frank or to you, Mr. Anderson, is, does your request have the support of your Governor and the two Senators?

Mr. ANDERSON. Yes.

Mr. FRANK. Yes.

Senator MIKULSKI. So it's not an area of unresolved conflict or dispute; is that correct?

Mr. FRANK. Yes; we are completely in a comanagement setting now with the support of the State of Washington and our delegation completely. That's why we are here today, and we're going to have an opportunity to talk with your staff person.

Senator MIKULSKI. Good. This is a unique issue, and we're always interested in working with your two very fine colleagues, Senator Gorton and, of course, Senator Adams, who is a member of the full committee.

I think it would be helpful to us if Senator Adams, particularly as a member of the committee, conveyed to us by letter what he thinks the State of Washington needs and its unique situation and that this is not a disputed issue. Our problem is not with treaties or openings, but it's with EPA paying attention to this rather unique situation.

Mr. ANDERSON. I believe we can do that. It's obviously still a very difficult issue in the management of the resource, but we do have their recognition of our role and a willingness to support us. There are also nationally things that need to occur, and that's something that we'll work the staff on.

Senator MIKULSKI. We'll look forward to working with your two Senators, and the reason I say particularly Senator Adams is because he is a member of the full committee.

Mr. FRANK. Senator, our Senator was going to come down today and introduce us, but of course the time, we've run out of time.

Senator MIKULSKI. It is not an easy day here. We thank you for your testimony and the clarity in which you presented it.

Mr. FRANK. We appreciate it.

[The statement follows:]

STATEMENT OF BILL FRANK, JR.

Honorable Barbara Mikulski, Chair, and honorable members of the Committee, I am Bill Frank, Jr. Chairman of the Northwest Indian Fisheries Commission (NWIFC). Present with me today are Jim Harp, Vice-Chairman, Terry Williams, Commissioner, Bob Whitener, Commissioner, James R. Anderson, Executive Director, and John Hollowed, Policy Analyst are here to assist in answering any questions you may have on our interest in this subcommittees activities and budgets. We are here today to respectfully request appropriations from the Environmental Protection Agency's budget to assist twenty-two tribes and tribal organizations in Washington State for fiscal year 1990. To assist the Committee members, I would like to summarize background relevant to our request.

BACKGROUND

The NWIFC is here today representing twenty treaty fishing tribes in western Washington and the Yakima Indian Nation. Since the turn of the century the tribes in the Northwest have been in conflict and litigation concerning their treaty rights with the State of Washington. Finally, in 1979 the United States Supreme Court re-affirmed the treaty tribes right to harvest fifty percent of the anadromous fish passing through tribal usual and accustomed areas. In 1980, the federal district court held that the United States and the State of Washington must not permit degradation of fish habitat which would diminish the treaty harvest right. The federal courts have recognized that protection of water quality and other attributes of fish habitat are necessary to secure the Constitutionally protected rights of harvesting fish for the tribes.

The legal principles enunciated in United States v. Washington and other federal court decisions are the basis upon which the tribes are involved with off-reservation environmental issues. As a result of federal court decisions, the State of Washington has recognized the tribes as "co-managers" of the fish resource in our state. Co-management status of tribes has been recognized in the United States-Canada Pacific Salmon Interception Treaty. The tribes are actively involved in the Salmon Treaty which obligates the parties to protect and enhance the fish habitat in both countries. As "co-managers" in Washington, the tribes must have the resources to adequately participate in environmental programs both off and on-reservation to ensure adequate protection of their treaty rights and full implementation of the U.S-Canada Salmon Treaty.

Rather than continue an era of conflict, the State of Washington has recently proclaimed a policy of working with the tribes on a government-to-government basis to resolve long-standing conflicts (See Attached Proclamation). **In addition, the State of Washington and various federally recognized tribes are at the final stages of discussions concerning environmental disputes that fall within the scope of water quality and other natural resource issues. These discussions will outline a process by which the tribes, State of Washington, and local governments will work cooperatively together in order to seek resolution of environmental disputes and issues both on and off-reservation within the context of government-to-government relations.**

SUMMARY OF THE REQUEST

FEDERALLY RECOGNIZED TRIBES IN WASHINGTON STATE REQUEST ADEQUATE FUNDING SUPPORT TO INITIATE TRIBAL ENVIRONMENTAL PROGRAMS AND ADDITIONAL EPA STAFF TO BE INVOLVED IN INDIAN RELATIONS AND PROGRAMS

The Environmental Protection Agency's (EPA) established Indian policy (1984) of working with federally recognized tribes on a government-to-government basis concerns more than 375 Indian tribes in the lower 48 states controlling over 52 million acres of land base. The combined area of these Indian reservations is equivalent to several states of our nation. Even though the EPA has worked closely with the states to implement adequate environmental programs, little has been done to accomplish the same for the tribal governments. Indian tribes are almost two decades behind the states both in resources received from the EPA and in technical assistance provided by the EPA in developing tribal water program offices.

Presently, the EPA's Indian policy has not been implemented to any substantive degree for tribal governments. EPA has addressed environmental concerns of the states of this nation except 52 million acres of tribal lands. It is long over-due that the EPA consider Indian tribes viable clients as they have done with the states. For example, the EPA's Section 106 grants for the 1988 budget was over $60,850,000, of which less than 1-1/2 % ($913,000) was provided to the tribes nationally. Of the total section 106 funds, less than two tenths of a percent (0.17% or $102,000) were provided to those tribes in Washington State.

On behalf of the Washington State tribes, we respectfully request; (1) the EPA to provide $25 million for tribal programs nationally, including 24 EPA staff devoted to Indian relations and programs. A portion of this staff should be devoted to Indian water resource programs, and (2) the EPA to appropriate $6 million for the twenty-two tribes and tribal organizations in Washington State to enable the tribes to assess their off and on-reservation needs concerning water quality and to continue cooperative approaches in environmental protection. This "front end" investment will promote cooperation and increased tribal involvement in environmental protection as has been done between the EPA and state governments.

The State of Washington supports tribal involvement in environmental protection both off and on-reservation. The state intends to work with the tribes on a government-to-government basis. Presently, twenty western Washington tribes and the Yakima Indian Nation are in the final stages of discussions with the State of Washington on the subject of environmental protection. The results of these discussions will outline a cooperative process between the tribes, state agencies and programs, and local units of governments in areas of environmental protection.

Tribal-State discussions recognize that between governmental units, problems are often shared and the principle of comity between neighbors often serves the best interests of both. All participants to the Tribal-State discussions acknowledge there has been a gradual deterioration and loss of natural fish habitat in Washington State streams. Although there are many individual factors contributing to this, the general trend toward reduced production of habitat is the result of a combination of activities performed by humans--activities which alter and destroy water quality required for successful fish and wildlife production. The only potential means to deal with these problems is through cooperation between all affected jurisdictions.

The tribes propose to initiate a coordinated planning process to protect, enhance, and restore fish and wildlife habitat that are dependent on the water resources of the state. The tribes will explore regional schemes of combining a consortium of tribes for environmental programs in addition to a state/tribal component of shared responsibilities. Tribal activities will include monitoring and evaluating point source and nonpoint source pollution, establishment and review of water quality programs and standards, and environmental education.

All tribes participating in this proposal have governing bodies capable of substantial governmental duties and powers. The tribes involvement in environmental issues off and on-reservation pertain to the management of water resources which are necessary to protect the tribes treaty resources.

CONCLUSION

The federal government has a trust responsibility to the tribes by virtue of the treaties entered into agreement between the United States and Pacific Northwest tribes. This trust responsibility is a fiduciary relationship required by all departments and agencies of the federal government to ensure the tribes have adequate resources to self-govern their people, home land, and those activities that affect their rights. Consistent with the EPA's policy since 1984 of tribal "self government" and "government-to-government" relations between the federal government and tribal governments, the tribes request that additional EPA staff be involved in Indian relations and that programs and adequate funds be appropriated to implement an environmental action plan for the federally recognized tribes of Washington State.

Funding necessary to support the tribes involvement in environmental issues realizes the EPA's long-range objective of including tribal governments as partners in decision-making and program management on reservation lands. Incremental assistance will be necessary in the ensuing years to assist the tribes in establishing effective environmental programs.

In addition, implementation of tribal environmental programs enables the tribes to participate with the state in environmental policy and management on a government-to-government basis. The proposed process and implementation of tribal environmental programs will provide a model of cooperative resolutions to environmental issues for other tribes and states. Funding this program will provide invaluable information for the EPA's continued implementation of their tribal policies of government-to-government relations, protection of treaty resources, and enhancement of the environmental quality on reservations.

SUBCOMMITTEE RECESS

Senator MIKULSKI. I thank all of you for the crispness in which you presented your views and requests.

The subcommittee will now stand in recess until 3 p.m., when public witnesses will continue to testify and Senator Fowler will be here.

[Whereupon, at 12:55 p.m., Thursday, May 18, the subcommittee was recessed, to reconvene at 3 p.m., the same day.]

(Afternoon Session, 3:10 p.m., Thursday, May 18, 1989)

NONDEPARTMENTAL WITNESSES

Senator **Fowler**. Folks, I really appreciate your indulgence. We're going to vote supposedly in 45 minutes. So I want to thank you by at least going from 3 to 4 minutes each because I kept you waiting so long.

The first panel, Linda Eichmiller, William Parrish, Mayor James Perron, Beverly Corelle, and David Dickson.

All right, we'll start with Ms. Eichmiller.

Environmental Protection Agency

STATEMENT OF LINDA EICHMILLER, ASSOCIATION OF STATE AND INTERSTATE WATER POLLUTION CONTROL ADMINISTRATORS

Ms. **Eichmiller**. Senator, I am the deputy director of the Association of State and Interstate Water Pollution Control Administrators. Those are the officials that manage the Clean Water Act in the 50 States.

I am here today representing them to make three recommendations.

First, to fully fund the municipal wastewater treatment construction grants program at the $2.4 billion level.

Second, to fund section 106 State management of the State water program at $140 million.

Third, to fully fund the nonpoint source program under section 319 at $100 million.

NEED FOR RECOMMENDATIONS

The reasons we are making these recommendations are the following.

In the area of section 106 States are experiencing a precipitous decline in Federal support to State management because of the termination of the grants program and the setasides under that program. In fiscal year 1990, this decline will be $25 million. We feel that that needs to be offset to continue to manage the national program.

Second, the requirements are increasing. In 1990, the Clean Water Act amendments of 1987 will require $165 million alone to implement. In total, the Clean Water Act in 1990 will cost the States $730 million. What we are asking for in section 106 is a 25 percent Federal share at a modest very conservative estimate of implementation costs.

Now, the administration has requested an increase for section 106, but that increase of $16 million doesn't even offset the decline in funding under title II.

They also earmarked $22 million for special projects. We take very strong exception to that and urge the committee to delete these setasides for special projects in favor of supporting the Clean Water Act statutory mandates and leaving States with the flexibility and the full funding they need to meet their responsibilities.

CONSTRUCTION GRANTS PROGRAM

For municipal wastewater treatment, as you know, Congress and the administration made a covenant in the 1987 amendments to capitalize State revolving loan funds. The administration's budget recommends $1.2 billion for the construction grants program, which is a 50-percent decrease below the $2.4 billion authorized level.

We are urging you to fully fund that program. The $2.4 billion is needed clearly. States have identified recently over 7,600 projects to be exact for $45 billion that could use those funds in the next 5 years. We are not talking about pork barrel. We are talking about projects, 53 percent of which have immediate compliance problems in the near term and 36 percent, for example, have water quality and public health problems.

Without full funding of the State revolving loan fund, we are concerned that it cannot be fully capitalized. So that what was envisioned in the Clean Water Act amendments will not be fulfilled, and we are going to have municipal noncompliance problems escalate significantly, we are going to have increased pollution control costs and water quality is going to deteriorate.

Sadly, I guess the ones that will be most affected are small communities who that program could help the most as well.

Last, we support full funding for nonpoint sources under section 319. We realize that ultimately that is a State and local responsibility, but as well a Federal, and I emphasize seed funding is very important to addressing those priorities and maintaining a cohesive fabric throughout the country that is necessary for a credible program.

That cannot be accomplished as proposed by the administration by taking money out of section 106 to rob Peter to pay Paul. This cannibalizing will divert money from the other Clean Water Act mandates that we must also meet.

In summary, the public support for clean water is increasing significantly. USA Today yesterday had a figure of 83 percent support, and I think we all know that.

We would just urge you to support very strongly clean water.

Thank you.

Senator FOWLER. Thank you very much.

[The statement follows:]

STATEMENT OF LINDA EICHMILLER

ASIWPCA represents those officials who manage surface and groundwater programs in the States. Since passage of the Clean Water Act, the success of the nation's efforts has been well recognized and documented before this Committee. Twenty years ago, raw sewage and industrial pollution spewed forth into the nation's waters. Reports were all to frequent of fish dying in waterways choked with contaminants. Tremendous progress has been made since enactment of the 1972 Clean Water Act, but much remains to be done.

Many challenges continue and the 1987 Water Quality Act set forth bold new State initiatives. Unfortunately, the Administration's 1990 Budget for municipal wastewater treatment ($1.2 Billion) and State management assistance ($83.2 Million for Section 106) puts these activities in serious jeopardy. **The Association is vitally concerned about the future of our nation's water quality program and urges the Committee to reject the trend of program reductions by:**

- **Fully funding municipal wastewater sewage treatment grants and the State Revolving Loan Fund (SRF) at the $2.4 Billion authorized level,**

- **Supporting $140 Million for Section 106 State management assistance, and**

- **Funding Section 319 for nonpoint source control at the authorized level.**

I. **State Management of the National Water Program**

The Law -- Congress enacted Section 106 to promote State management of the national water program. That strategy has been effective, but recent developments [some of which may be unintended consequences of the 1987 Amendments] raise cause for great concern. Specifically:

1) **Requirements have increased dramatically,** as most recently evidenced by the 1987 Water Quality Act which established broad and complex new programs to transition from Federal wastewater construction grants to the State Revolving Loan Fund and to:

   * eliminate toxics problems
   * manage nonpoint sources
   * permit stormwater discharges
   * permit and dispose of sludge

2) **Federal support to States is declining** with the termination of the Construction Grants setasides in Section 205 supporting the base water program. In FY 1990, this will result in a loss to States in excess of **$25 Million.**

3) **Inflation has significantly eroded** the buying power of Section 106.

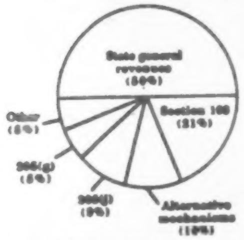
State Need -- Federal support is essential to successfully implement the new 1987 requirements as well as continue the progress achieved in water quality since 1972 under the existing program.

In the Fall of 1988, ASIWPCA surveyed the States to identify existing funding support to the base Water Quality Program (monitoring, compliance etc.), outstanding funding needs in the base program, and impacts of the 1987 Water Quality Act. Results from 43 States (Attachment A) indicate there is a major shortfall which can only be addressed through **increased funding and program simplification** to have any reasonable expectation that States can meet Congressional mandates articulated in the Clean Water Act:

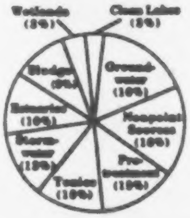
- In FY 1988 funding to the base program totaled $316 Million. With inflation, **$349 Million** will be required to continue this level of activity in FY 90.

- ☐ Additional funds in the range of 24% ($84 Million) are needed to bring the quality of the base program up to an adequate level.
- ☐ $165 Million is needed to implement the 1987 Water Quality Act in FY 90.

Source of FY 88 Funds for the Base Water Quality Program



Allocation of 1987 Water Quality Act Funding Needs
($720 Million for FY89-92)



In total -- $598 Million would be required by States to successfully implement the Clean Water Act in FY 90. While States do not expect the Federal government to cover all program needs, a modest 25% of the total Clean Water Act costs is a Federal fair share.

Administration's Budget -- Rather than recognize growing responsibilities, the Administration actually cuts funding to the States. While touting a $16 Million increase for Section 106, the $83.2 Million requested:

- ☐ **Does not offset the over $25 Million decline** associated with the phase-out of the Construction Grants program under Section 205(j). For example, these funds support many vital planning activities for groundwater protection, monitoring and analysis, nonpoint sources, toxics, permitting, etc. The situation deteriorates further if Section 205(g) trends are considered.
- ☐ **Does not provide requisite State flexibility to address priority problems because $22.4 Million is earmarked for special USEPA activities** for wetlands, groundwater, nonpoint sources, Indian Tribes, etc. The Association strongly opposes such setasides. Shifting scarce Section 106 funds to other statutes (i.e. the Safe Drinking Water Act for wellhead protection and Superfund planning) or other authorizations (e.g. Section 319) undermines the integrity and implementability of the overall program. The best opportunity this nation has to address wetlands, etc. is to give States the latitude they need to maintain a strong base program.
  - * Section 106 should not be used by USEPA to arbitrarily select which mandates are important to address -- Flexibility is essential to support priority problems which vary by State.
  - * The USEPA setasides virtually ignore 1987 Clean Water Act priority mandates related to pretreatment, toxics, stormwater, and sludge (see Attachment B).
  - * Setasides as outlined by USEPA add layers of bureaucracy for USEPA special projects. Significantly more cleanup can be accomplished by States in the base program.

FOR THE REASONS OUTLINED ABOVE, THE ASSOCIATION URGES CONGRESS TO INCREASE SECTION 106 FUNDING TO $140 MILLION WITH A 25% FEDERAL FAIR SHARE AND ELIMINATE NATIONAL SETASIDES IN ORDER TO:

1) **IMPLEMENT REQUIREMENTS OF THE 1987 WATER QUALITY ACT, AND**

2) **OFFSET THE DECLINE IN FUNDING ASSOCIATED WITH TERMINATION OF THE CONSTRUCTION GRANTS PROGRAM. IT IS IMPORTANT THAT SUCH FUNDS BE ALLOCATED DIRECTLY TO STATES FOR PROGRAM MANAGEMENT.**

II. Municipal Wastewater Treatment

The 1987 Water Quality Act set forth an orderly transition from the Construction Grants program to the State Revolving Loan Fund (SRF) which is of vital importance to the future of clean water in this nation. The Act envisioned the SRF as the clean water financing mechanism to address a broad array of municipal wastewater, nonpoint source, and estuarine programs. In order to facilitate Federal deficit reductions and to professionally take the "high road" of "fair share" reductions, State and local governments agreed to assume responsibility in perpetuity for over $83 Billion in USEPA estimated wastewater treatment plant construction needs. This assumption was based on a carefully crafted covenant with the Congress providing $18 Billion in Federal funding through FY 94.

> **There is no substitute for full funding of the SRF. To delay will double, triple, or quadruple the actual cost of preventing pollution and meeting statutory requirements of the law.**

The $1.2 Billion requested in the Administration Budget for municipal wastewater treatment plant construction in FY 90 — a 50% reduction from authorized levels — **violates that covenant** and will have long term adverse effects. Specifically:

- **the goals of the SRF as created by Congress cannot be successfully achieved** at the reduced funding levels,

- **municipal non-compliance will undoubtedly escalate,**

- **municipal pollution control costs will increase** — to prohibitive levels for many small and financially hard-pressed communities, and

- **the quality of the nation's waters will, in all probability, deteriorate.**

To supplement the funding baseline established with its previous surveys, the Association in March 1989 surveyed the States to report the status and future of the SRF. Based on the 48 respondents (see attachment C):

1. **States are well under way in establishing and operating SRFs.** As the following table indicates, a flurry of activity occurs in FY 89.

TOTAL NUMBER OF STATES ACHIEVING MILESTONES

	Law Enacted	Regulations Adopted	Capitalization Grant filed with USEPA	Loans Committed
10/1/88	39	20	13	7
10/1/89	48	45	46	37
10/1/90	48	47	47	45

Despite this progress, States have obligated funds less quickly than they envisioned at the outset of the 1987 Amendments because:

- the program was complex and innovative,
- 1986 Tax Act issues had to be resolved and financing had to be secured,
- requirements such as the Letter of Credit increased costs,
- USEPA policy was (and still is) delayed, and
- detailed regulations had to be established to get USEPA approval.

2. **States are committed and ready to use SRF funds.** 17 States currently have USEPA approved capitalization grants and 40 are projected by October 1989:

- By March 1989 States issued **$442 Million** in loans to projects. By September 1989 they project **$1.6 Billion** total.

- $836 Million in advance State commitments of their 20% share have been made in anticipation of the full Federal funding commitment:

- * $216 Million deposited to the SRF,
- * $524 Million authorized by bonds or designated revenue streams, and
- * $96 Million appropriated for deposit.

[The 80% Federal share at this level is: $4.15 Billion]

3. **Local community projects need full funding support:**

   ☐ **395 projects totalling over $5 Billion required to meet the July 1, 1988 National Municipal policy requirements have yet to be funded,**

   ☐ **7,193 additional wastewater projects totaling over $40 Billion have been identified by the States as potential loan recipients over the next 5 years** based on applications, loan requests or other information.

   These projects are vital to maintain compliance and meet the nation's water quality and public health standards. Of the 2600 projects described:

   Type:
   89% are for SRF loans,
   5% are for grants under the Administration's $400 Million request, and
   6% are for grants with the additional $800 Million authorized.

   Reason:
   40% are needed to maintain future compliance, e.g. facility replacement or expansion,
   36% address water quality and/or public health problems,
   33% are small communities (generally less than 3500 population),
   13% are necessary to comply with the National Municipal Policy, and
   13% must upgrade to secondary treatment.

   [Note that projects can have more than one reason.]

4. **The loss of Federal funds in FY 90 will increase over time.** Based on Federal funds with twenty year loan repayments at 3% interest — the cash flow for investment in authorized pollution abatement uses from 1990 to 2009 will be more than:

   ☐ $21 Billion at the fully authorized appropriations, and
   ☐ $10 Billion at the Administration's proposed appropriation levels.
   $11 Billion = the loss of project funds to the States

   If States were to leverage, with exemption from the USEPA Letter of Credit payment format, these sums could be increased several times.

5. **Full funding is critical to assuring affordable treatment — Small communities will be particularly hard** hit by the Administration's request because they frequently cannot get bond ratings or secure affordable financing independently. States will also experience difficulty without SRF funding because their bonding capacity is limited. Given large needs and competing demands, the Federal funding investment cannot be replaced. User charges without SRF funding would increase — sometimes prohibitively. Each community is different, but by way of example:

   ☐ at a 2% interest rate on loans, West Virginia estimates user charges under the SRF to be $35-45/mo. - compared to $70-80/mo. without the SRF, and

   ☐ at a 5% interest rate California estimates:

Population	SRF Loan	All Local Financing	Annual Difference
600	$51/mo.	$67/mo	$192
26,300	$16/mo.	$21/mo	$60
3,000,000	$5/mo	$6/mo	$12

III. Nonpoint Sources

The 1987 Water Quality Act placed national priority on controlling nonpoint source pollution. While these sources must be addressed at the State and Local level, Federal financial support is essential to assure a credible and cohesive national program. It is the position of the States that nonpoint sources be funded at the Section 319 authorized level. The Administration Budget, however, provides no funds for Section 319 nonpoint source control — opting instead to divert limited Section 106 funds from other vital Clean Water Act mandates. While States have been in a position to conduct minimal efforts with Section 205 (j) funding in the absence of Section 319 funds, those activities will decline or be eliminated with termination of Title II. And, while nonpoint sources can be funded under the SRF once enforceable requirements are met under Title II, the limited SRF funding put forth in the Administration Budget does not provide this option for the majority of the States.

IV. Summary

The public places a high priority on environmental protection. Clean water is this nation's most precious resource — held in trust for future generations. It is most distressing that the Administration's Budget sets the nation on a course toward deteriorating water quality. State Water Administrators urge the Committee to fully support the Clean Water Act. States are willing to do more than their share, but simply cannot bear the funding burden alone. Adequate levels of Federal funding are vital to a strong national program.

The Clean Water Program has made significant contributions to this nation's economic well being with the 1987 Water Quality Act agreement to phaseout municipal financing. We urge the Committee to stand by that Congressional covenant and provide full funding for wastewater treatment.

STATEMENT OF WILLIAM F. PARRISH, JR., PROGRAM ADMINISTRATOR, MARYLAND WATER SUPPLY PROGRAM, ON BEHALF OF THE STATE DRINKING WATER ADMINISTRATORS

Senator FOWLER. Mr. William Parrish, Association of State Drinking Water Administrators.

Mr. PARRISH. My name is Bill Parrish, and I'm the administrator of the Maryland Water Supply Program, and I'm also here to represent the Association of State Drinking Water Administrators.

ASDWA is a professional organization which represents the drinking water programs in all the States. It was formed in 1984 in response to a need for better communication and representation at the national level in drinking water issues.

The State Drinking Water Programs regulate approximately 204,000 public water supplies nationwide serving 219 million people. The State Drinking Water Programs need a large infusion of funds over the next 5 years if they are going to be able to implement the regulations being developed by the EPA in response to the amendments to the Safe Drinking Water Act of 1986.

A recent study of State implementation costs jointly undertaken by ASDWA and EPA's Office of Drinking Water showed that the States will need $201 million in one-time startup costs between now and 1992. After all the regulations are promulgated, the States will need an additional $131 million a year to properly implement and enforce the regulations. This amount is over and above the approximately $96 million in resources currently being expended per year by the States and EPA.

In Maryland, our current expenditures of $870,000 a year would need to be increased more than three-fold to meet all the current and new regulations expected over the next 3 to 5 years.

Of the $96 million currently available to the State Water Programs, approximately $65 million or 68 percent of that $96 million is appropriated by State legislatures or comes from various types of fee systems. The Federal Government currently contributes approximately $31 million, which amounts to about 32 percent.

The burden clearly lies with the Federal Government to increase their share of support for providing drinking water that meets existing and new federally mandated drinking water regulations.

Over the next 3 years, the EPA will promulgate rules covering some 75 to 100 new contaminants. Also, the new regulations being promulgated under the Safe Drinking Water Act amendments are monitoring coverage for many contaminants to a new grouping of water systems called nontransient, noncommunity public water supplies. Standards for volatile organic chemicals, lead, radon, and synthetic organic chemicals, such as pesticides, will apply to this new group of supplies which includes schools, day care centers, and places of employment. As a result, the workload at the State level will increase substantially over the next several years.

If additional funding is not forthcoming from the Congress, ASDWA is concerned that there may be a primacy crisis within 3 years.

PRIMARY CRISIS

Senator **Fowler**. What's a primacy crisis?

Mr. **Parrish**. Well, primacy is the formal delegation of enforcement authority over the Safe Drinking Water Act to the States, and what ASDWA feels is a likely result of the new requirements being placed on the State programs without sufficient Federal support is that States may be forced to return primacy to the EPA.

Senator **Fowler**. I see.

Mr. **Parrish**. A situation such as this would not be in the best interest of the public and the safety of their drinking water supplies.

It's ASDWA's belief that to adequately meet increasing responsibilities the level of funding for State program grants must be increased from its current level of $33.45 million in fiscal year 1989 to at least $90 million by fiscal year 1992. This will require an increase of $15 million in fiscal year 1990, which is $8 million more than has been included in EPA's budget request, and also an increase of $21 million in each of the 2 subsequent fiscal years.

We also request that the $10 million authorized under section 1442(g) of the Safe Drinking Water Act amendments for technical assistance to small systems be appropriated. With these added funds, States would be better able to meet the mandates of the 1986 amendments and thereby ensure the safety of the Nation's public water supplies.

Senator **Fowler**. Very fine. Thank you, sir.

[The statement follows:]

STATEMENT OF WILLIAM F. PARRISH, JR.

Program Administrator
Maryland Water Supply Program

FEDERAL ASSISTANCE FOR STATE PUBLIC WATER SUPPLY SUPERVISION PROGRAMS

I. INTRODUCTION

ASDWA is the professional association that represents the collective interests of state drinking water programs. The Association was formed in 1984 in response to a growing need of state administrators for representation at the national level. In its short history, ASDWA has become a respected voice in communicating the views of state primacy agents to the Congress, the Environmental Protection Agency (EPA), and other professional organizations. ASDWA's primary mission is the protection of public health through effective management of state water supply programs and implementation of the Safe Drinking Water Act Amendments of 1986 (SDWA). To accomplish this mission, the Association provides vital communication, coordination, and information transfer services between state programs and EPA, the Congress, and other national organizations.

State drinking water programs regulate approximately 204,000 public water supplies nationwide serving 219 million people. All 57 states and territories are members of ASDWA; virtually all states and territories actively support the Association through dues payment and/or participation in ASDWA activities.

II. RESOURCES NEEDED FROM THE CONGRESS

State drinking water programs need a large infusion of funds over the next five years if they are to implement the regulations being developed and promulgated by the EPA in response to mandates contained in the SDWA Amendments of 1986. A recent study of state implementation costs, jointly undertaken by ASDWA and the EPA's Office of Drinking Water, revealed that states will need $201 million in one time start-up costs between now and 1992. After all regulations are promulgated and adopted, states will need an additional $131 million annually to properly implement and enforce the regulations; this amount is over and above the approximately $96 million in resources currently being expended annually by the states. Survey results also showed that state drinking water programs currently need $128 million annually, as opposed to the $96 million available; thus, there is currently a $32 million shortfall.

Under the Safe Drinking Water Act of 1974 (and subsequent amendments), the Federal government is authorized to provide up to

"75 percentum" of the cost of a state's drinking water program. These funds were to be made available through public water system supervision (PWSS) grants; the grants were to be made as a quid pro quo for the state's acceptance of primary enforcement responsibility (primacy) under the Act. The Federal government's share has never come close to 75 percent on a nationwide basis and the Federal share has been declining since about 1981. Of the $96 million currently available to state drinking water programs, approximately $65 million (68%) is appropriated by state legislatures or accrues to drinking water programs from various types of fee systems. The Federal government currently contributes approximately $31 million, which amounts to about 32 percent.

Over the next two to three years, the Agency will promulgate extensive, stringent rules covering some 75 to 100 contaminants. As a result, the workload at the state level will increase dramatically over the next five to seven years while additional resources will remain static unless Congressional appropriations are increased significantly.

Given the high proportion of total resources currently being contributed by the states (i.e., 68%), governors will have a difficult time convincing their legislatures to appropriate additional funds to pay for implementation of the SDWA Amendments. It is therefore incumbent upon the Congress to appropriate at least 50 percent of the total amount needed to properly implement the regulations. After all, it was the Congress which enacted the SDWA Amendments unanimously.

If additional funding is not forthcoming from the Congress, ASDWA envisions a "primacy crisis" within the next three years. Due to resource constraints, the states simply will not be able to do the things required by EPA to retain primacy. Some states may decide to not even make the effort to adopt rules if they feel they are "unimplementable." Several state administrators have indicated that they will not adopt rules (such as the lead and copper rule proposed by the EPA in August, 1988) that they do not feel they can implement properly.

A situation in which the states relinquish primacy to EPA does not serve anyone's interests -- especially the consuming public whose health must be protected. The Federal government would be required to assume primacy responsibilities and the state contributions would be unavailable. This would have a substantial impact on consumers, the regulated community, and EPA and the states. To avoid any type of crisis, additional Federal funding must be forthcoming.

Promulgation of the surface water treatment rule (SWTR), the total coliform rule (TCR), and the probable promulgation of a comprehensive Lead and Copper rule containing stringent requirements, will result in greatly increased resource needs by state drinking water programs in FY-90. Although Congress appropriated the same amounts in FY-88 and FY-89, it is imperative that appropriations be increased significantly in FY-90. The states' ability to carry out increasing statutory and regulatory responsibilities will depend directly on the level of resources that Congress appropriates.

It is ASDWA's belief that, to adequately meet increasing responsibilities, the level of funding for (PWSS) grants must be increased from its current level of $33.45 million in FY-89 to at least $90 million by FY-92. This will require an appropriation of an additional $15 million in FY-90 ($8 million more than the $40.45 million requested by the EPA) and an increase of $21 million in each of the two subsequent fiscal years. We also request that the $10 million authorized (under section 1442(g) of the SDWA Amendments) for technical assistance to small water systems be appropriated. With these added funds, and likely increases in the states' share of PWSS program budgets, state primacy agencies can continue to ensure the safety of the nation's public water supplies.

ASDWA also supports the funding request of the National Rural Water Association (NRWA). NRWA's efforts are of great assistance since current funding levels do not allow full coverage by state field personnel of small community and non-community systems.

III. PROTECTING HUMAN HEALTH THROUGH EFFECTIVE DRINKING WATER PROGRAMS

Even though drinking water is the "last line of defense" to protect children and other sensitive populations from lead, synthetic organic chemicals, radon, and microbiological contaminants, the resources expended on drinking water are extremely small relative to other "environmental" programs. The government currently is expending billions of dollars per year to clean up abandoned hazardous waste sites although EPA studies have shown that the number of persons exposed to Superfund sites numbers only in the thousands. By contrast, public water systems serve more than 219 million persons, all of whom are potentially exposed to one or more drinking water contaminants.

Federal expenditures on Superfund that total in the billions seems out of proportion when the Federal government is willing to appropriate only $33 million for direct public health protection achieved through effective state drinking water programs. Many officials who administer both the drinking water and Superfund programs at the state level (including those in New Jersey, South Carolina, and Oklahoma) believe that drinking water programs are greatly underfunded compared to Superfund. They believe that greater public health protection could be achieved on a dollar for dollar basis by shifting funds from Superfund to drinking water programs.

IV. THE CONSEQUENCES OF INADEQUATE FUNDING

Despite the importance of safe drinking water to human health, the responsibilities of state drinking water agencies far exceed operating budgets. As a result, activities have been prioritized and in some cases, public health protection compromised. Since 1974, the number of reported waterborne disease outbreaks attributed to public water supplies has increased significantly. Between 1963 and 1982, at least 495 outbreaks of waterborne disease occurred in public water systems (see Figure 1). This indicates that there is still significant work which needs to be done to address even the most basic public health problems associated with water supply.

As new regulations are promulgated under the Safe Drinking Water Act Amendments, the states fear that the so-called "glamour contaminants" -- lead, radon, and volatile and synthetic organic chemicals -- and large systems will command the majority of both their attention and resources. This will mean that less attention and resources will be available to assist small community systems (e.g., trailer parks, homeowners associations, and rural systems) and non-community systems (e.g., schools, day care centers, camps, churches, etc.).

Preventive practices, such as technical assistance, operator training, sanitary surveys, and administrative oversight tend to suffer when resources are scarce, especially in small community water systems and non-community water systems. Ironically, these are the systems that require the most attention and which account for the vast majority of maximum contaminant level (MCL) violations.

Unless adequate resources are made available to state programs, the new regulatory mandates embodied in the SDWA Amendments will only serve to exacerbate this situation. As more regulations are promulgated, it will be the small, rural systems, often ill-managed and serving low income, fixed income populations, that will fall through the "public health protection safety net."

V. DRINKING WATER: THE FOCUS OF MANY STUDIES IN 1988-89

Studies by various groups during the past two years have underscored the fact that protection of drinking water is a real concern at all levels of government and to the consumer. For example, a survey conducted by the League of Women Voters revealed that "the protection of drinking water supplies is the number one local environmental concern [for League] members."[1] A survey of state health officers conducted by the Association of State and Territorial Health Officials in April, 1987 ranked drinking water contamination as the most important of 27 environmental issues confronting states.

More recently, groups such as the National Wildlife Federation and Renew America have focused on the need for stronger drinking water programs at both the state and Federal levels. One of the conclusions reached by the National Wildlife Federation in its report entitled, Danger on Tap: The Government's Failure to Enforce the Safe Drinking Water Act, was that "EPA should request and Congress should provide sufficient funds for full implementation of the Safe Drinking Water Act."[2]

Renew America, in its State of the States Report: 1989, notes that "new federal requirements along with declining federal funding are increasing the pressure on already hard-pressed state water quality programs." Renew America predicts a "deepening funding shortfall" and concludes that "the rising costs of protecting water quality are leading to a crisis."[3]

These reports are indicative of the public's growing concern about its drinking water supplies and the need for increased Federal funding for state drinking water programs.

VI. COSTS OF IMPLEMENTING THE SAFE DRINKING WATER ACT AMENDMENTS OF 1986 -- AND WHO WILL PAY

With the enactment of the Safe Drinking Water Act Amendments of 1986, Congress specified 83 contaminants for which EPA must establish maximum contaminant levels. Congress also required EPA to develop a rule specifying the conditions under which untreated surface supplies must filter their water, and a rule that will require all public water systems to install disinfection.

In 1986, ASDWA presented testimony to this Subcommittee which estimated the additional costs of implementing the Safe Drinking Water Act Amendments at the state level to be in the range of $44-

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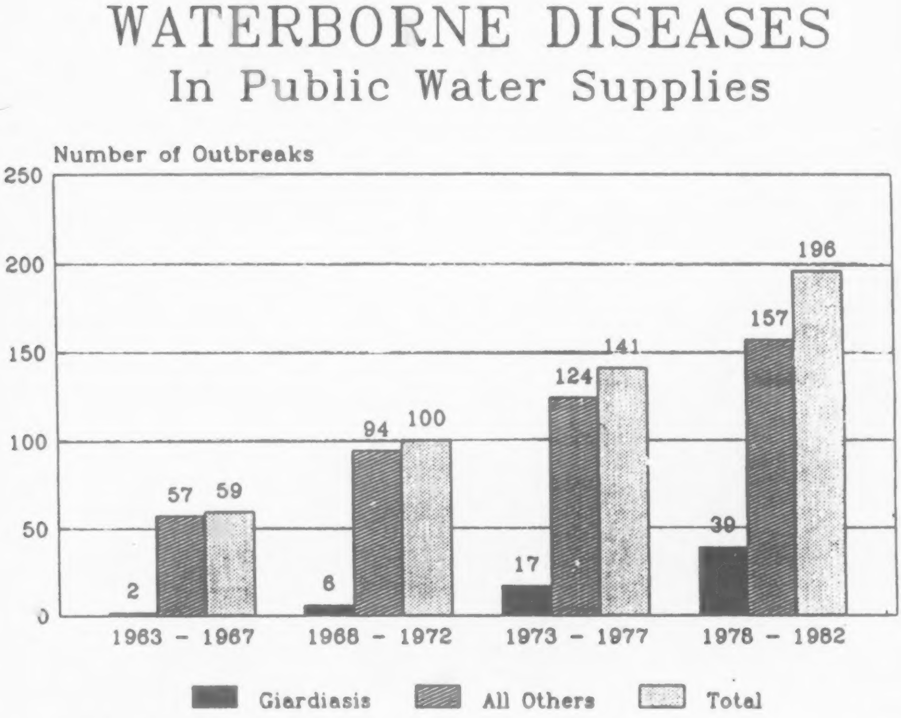
[1] News Release, League of Women Voters Education Fund, March 1, 1988

[2] Dean, Norman L., Danger on Tap: The Government's Failure to Enforce the Federal Safe Drinking Water Act, October, 1988, p. 7.

[3] Renew America, The State of the States: 1989, February, 1989, p. 4.

60 million annually. This number was based on several studies conducted by EPA coupled with historical experience of running state programs. The $44-60 million number was developed prior to the enactment of the 1986 Amendments. In 1987, ASDWA testified before the Subcommittee again and presented the results of an internally funded Resource Needs study which estimated state program costs for implementing only two sets of regulations -- the Surface Water Treatment Rule and volatile organic chemicals regulations -- at $21 million annually over the next five years.

Figure 1



Source: Logsdon, G.S. and E.C. Lippy. 1984. Environmental Engineering. Proc. of the 1984 Specialty Conference.

Working in conjunction with the EPA's Office of Drinking Water, ASDWA recently completed a comprehensive survey of states for the purpose of estimating state SDWA implementation costs. Study results include the following:

- Current expenditures at the state and Federal levels total $96 million annually;
- The estimated annual costs to meet current requirements is $128 million (a $32 million shortfall);
- States contribute $65 million annually while the Federal contribution is approximately $31 million;
- One time start-up costs for new regulations being developed

under the SDWA Amendments are estimated at $201 million between 1987 and 1992; and

- States will need an additional $131 million annually after 1992 (in addition to the $201 million in start-up costs) to properly implement and enforce the SDWA Amendments.

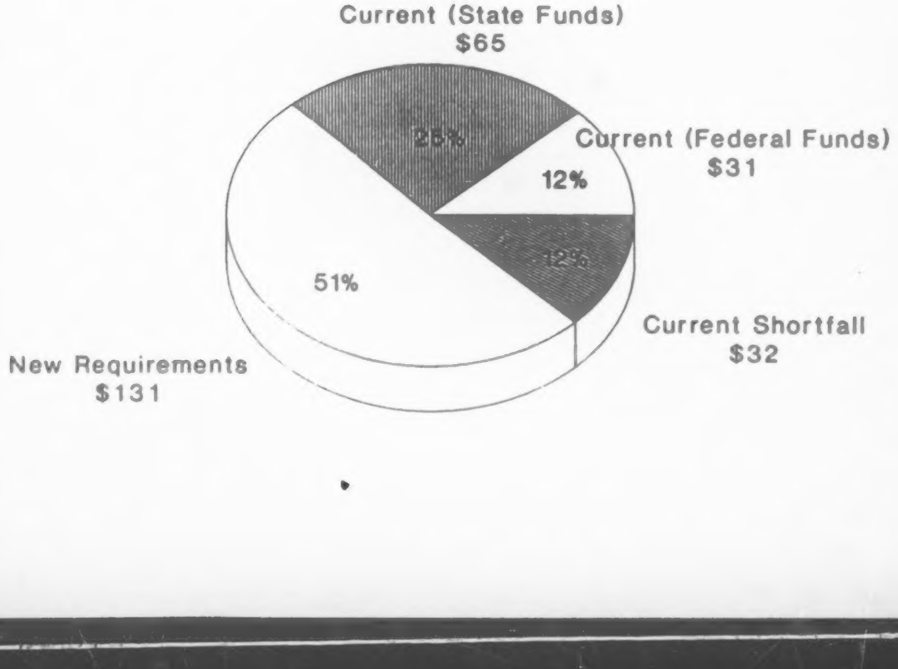
The uniqueness of this ASDWA study is its comprehensiveness and its credibility. The survey form was 18 pages in length with 37 pages of supplementary material to ensure consistency of information provided. The questionnaire was developed by a well known and respected consulting firm that has considerable experience in survey design. Thus, ASDWA and EPA are confident that the cost estimates developed are reasonably accurate.

With current state and Federal outlays in the $90-100 million range, these cost figures clearly show that only about 40-50 percent of the resources necessary to carry out Congressional mandates are available to state drinking water programs (See Figure 2). Clearly, this shortfall in program resources assures that Congressional objectives of improved public health protection will not be achieved and violations in public water systems will increase significantly.

The key question is, who will provide the additional resources needed for the states to do their jobs under the SDWA. The reality of the situation says that it will not be the states. As the jointly funded study by ASDWA and the EPA clearly showed, states already are paying for 68 percent of the program. Governors and state legislators are not likely to appropriate additional funds to carry out the plethora of complex and administratively burdensome regulations currently being developed by EPA.

Figure 2

Current and New Requirements
[Estimated Costs in $M/Year]



The Relationship between Resources and Primacy

Although virtually all states are supportive of the goals of the SDWA, the states are very concerned with regulations under development by EPA's Office of Drinking Water. Each set of regulations being developed contains a plethora of requirements and responsibilities which the states must carry out to maintain primacy. Many of these provisions -- such as those contained in the Agency's proposed Lead and Copper Rule -- are extremely burdensome in terms of cost. With respect to the lead rule in particular, ASDWA believes that health benefits can be achieved in a less costly way than has been proposed by the Agency.

As a result of EPA's primacy directives, state drinking water programs have shifted in emphasis over the past few years from being preventive in nature to simply reacting to problems. Considerable emphasis is now placed on the numbers embodied in the functions of compliance monitoring, data management, and enforcement. The complexity of the regulations being developed is perhaps necessary in order for the states to assure EPA that the public health is being protected adequately so that the EPA in turn can assure Congress that its mandates are being carried out. States are convinced, however, that a program "by the numbers" is not the most effective way of protecting the public health. State staff persons have been taken out of the field where they heretofore provided badly needed training and technical assistance to thousands of small water systems.

State officials often get asked, "Are you considering giving primacy back to EPA?" Looking into the future, there is a high probability that several states will relinquish primacy to the EPA -- but in most cases it will not be a decision made by those states, but rather by the EPA. There is growing sentiment, however, that states would rather relinquish primacy than give up further control over their programs.

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ASDWA appreciates the opportunity to present its views to the Subcommittee. The Association also appreciates the Subcommittee's consideration of our funding requests.

STATEMENT OF MAYOR JAMES P. PERRON, CITY OF ELKHART, IN

Senator FOWLER. Mayor James Perron from Elkhart, IN.

I hope we didn't charge the good citizens of Elkhart an extra night in one of these high-priced hotels.

Mayor PERRON. Not at all. I've got to get back to the city this evening anyway.

Senator, thank you for allowing me the time to be here. I also want to thank you, Senator; as I understand you have introduced some legislation on water conservation which is directly related to some of the things we're talking about this afternoon. We appreciate your efforts in that regard.

Senator FOWLER. Well, I'm extremely interested, and I appreciate it.

GROUND WATER PROTECTION

Mayor PERRON. I do appreciate the opportunity to appear before the committee today to talk about the very important issue of ground water protection as it affects our Nation and more particularly affects Elkhart, and we are looking forward in the hopes that

Congress will be able to provide a moderate amount of fiscal year 1990 demonstration funding to the EPA for the wellhead protection program.

In Elkhart, this has been the foremost issue that has been facing our community. We discovered a trichloroethylene groundwater contamination problem in a well field that supplies 70 percent of our water supply, we discovered it in 1981. Since that time we have been grappling with the issue, and there was some apparent mixups between the EPA and the State Board of Health over it.

When I took office in 1984, we began to realize that things weren't moving as rapidly as they should. The city in the meantime had spent a considerable amount of money in terms of putting in discharge wells to keep the public water supply safe, but the EPA Superfund action was not occurring.

We finally were able to get things coordinated to the point where that problem has been effectively taken care of. Air stripping towers were installed by the EPA at that well field to purify the water.

I should add, additionally, that there were other ground water contamination sites in and around the greater Elkhart area since that time. Again, it has just been a very pervasive problem and it has taken up a lot of my time, a lot of the people's time, and a lot of tax dollars locally.

But looking ahead, what we have been trying to do is turn what has been a very pervasive and negative problem facing our community into a positive. I guess the way I've looked at it is that Elkhart, IN, is just the tip of the iceberg in terms of ground water contamination problems, and indeed that seems to be coming true.

The good news in Elkhart is that it's a community where we have identified the problem and we are doing something about it by working with the EPA and State Board of Health and the people of Elkhart.

NEW WELL FIELD

However, we need to look ahead to the future, and we are in the process now of trying to develop a new well field, not only to provide for the future growth of the community and the health and welfare of the people of our city, but we also feel it's very important to protect that ground water supply, and we are hopeful that we will be able to be provided with some level of wellhead protection from the EPA during this funding cycle.

We believe that it's smart money, if you will. Of course, the Superfund program is very important, but essentially it's eating up a lot of the budget when we could be preventing the problems through the wellhead protection program.

I think it's money well spent, and I can assure you that in Elkhart, IN, we'll use it very wisely. My administration's attitude has always been to be able to show our community as an example. Where problems have occurred, if we can solve the problems with a little bit of assistance from the Federal Government working together in partnership, hopefully we can show Elkhart as an example of what can be done.

I have provided you with my formal testimony. I'm just talking from my words here, but I can't emphasize enough the importance of the wellhead protection program and we hope we'll have your support.

Senator **Fowler**. Well, you do, Mr. Mayor. In my case again I'm only one. But we heard the testimony earlier this morning, and I think it's one of the most cost effective things that we could do, and we have got to get ahead of it rather than always coming behind 3, 4, and 5 years later when everything is already contaminated.

But I appreciate the fact that you've seen a little bit of my legislation. We are starting very modestly, but at least it's a start, but I would like to see some funding decisions that gets the horse back before the cart and we'll be making those efforts.

Mayor **Perron**. Thank you, Senator. I would like to add, if I might, that Senator Lugar and Senator Coats have also been very supportive of our efforts.

Senator **Fowler**. Good.

Mayor **Perron**. They have a letter that was sent to Senator Mikulski, and I'll be able to provide that as part of the record as well from both Senators.

Thank you.

Senator **Fowler**. Thank you very, very much, Mr. Mayor.

[The statement follows:]

STATEMENT OF JAMES P. PERRON

Madame Chair and Members of the subcommittee, my name is Jim Perron. I am the Mayor of Elkhart, Indiana. First let me congratulate you, Madame Chair, on your assumption of the Subcommittee's Chair in the 101st Congress. Your leadership and that of the other Members is most appreciated. I also want to express my appreciation for the opportunity to appear before you today to discuss the important issue of groundwater protection and the efforts that we have undertaken in Elkhart to protect our groundwater supply, and to ask that you consider providing a moderate amount of fiscal 1990 demonstration funding to the Environmental Protection Agency for the Wellhead Protection program.

THE GROUNDWATER SITUATION IN ELKHART

Elkhart is a medium-sized city of 45,000 located in northern Indiana, near the Michigan border. Seventy percent of the City's drinking water is drawn from groundwater wells in the city-owned North Main Street Wellfield, fed by a shallow aquifer. In 1981 we learned that trichlorethylene (TCE) at a level of 94 parts per billion was present in finished water from the North Main Street Wellfield. In one production well, a TCE level of 800 ppb was found. We immediately recognized this as a matter for urgent and aggressive action. We took the two production wells that were contaminated out of service, and installed observation wells on one side of the wellfield, where we found that the TCE infiltration was coming from adjacent properties engaged in plating and degreasing operations. A total of $75,000 in City funds were spent on sampling and analysis activities. The previous wellfield output of 16 million gallons per day was cut to 10mgd to slow migration of the TCE contamination while we assessed our options.

Based on our study and recommendations by an environmental consultant , we spent $80,000 in City funds to install interceptor wells at the property boundary to create a hydraulic barrier to prevent further contamination of the wellfield. We successfully sought inclusion of the North Main Street wellfield on the Superfund national priority list, which was announced in December 1982. We worked closely with EPA through this process, to increase the Agency's involvement due to a series of delays and other difficulties encountered because of a major reorganization in the Indiana State Health Commissioner's Office and the State Board of Health. In August of 1985, EPA issued a "Record of Decision" requiring construction of a $2.5 million air-stripping facility to remove TCE from the wellfield's water. This facility was completed in August of 1987 and is operated by the City's water works, with costs reimbursed by the state's Superfund allocation.

While all this was going on, another groundwater contamination situation in a neighborhood just outside the City limits and served by private wells led to an EPA Region V emergency response action, and City expenditure of $125,000 to connect the affected households to the City water supply system. This obviously added to the sense of urgency that we had in supplying water to our citizens with our reduced wellfield capacity.

I have included this background information simply to make the point that in Elkhart we have seen firsthand that mitigation of groundwater contamination once it occurs is a very difficult and costly proposition, and one that should be prevented whenever possible through prudent investment before the fact. Due to the reduced output at the existing field, and to meet our future drinking water needs, the City is currently developing a new 5mgd wellfield, and taking careful steps to protect the new field from potential future contamination.

ELKHART'S EFFORTS TO PROTECT OUR NEW WATER SUPPLY

Elkhart has invested $250,000 in City funds to conduct hydrologic and hydrogeologic studies required by the Safe Drinking Water Act in siting a wellfield. The site that the City has selected as the best of several possible alternatives has two overlaying aquifers, separated by a thin confining layer of clay and silt that retards but does not prevent movement of water between the upper and lower aquifers. Both layers are susceptible to potential contamination from sodium, chloride, nitrates, and volatile organic compounds present in groundwater at nearby sites.

Of a projected $6 million in total construction costs for the new field, approximately $1 million will be required for wellhead protection measures, including drainage modifications to prevent contaminant runoff onto the site, recharge, barrier, and monitoring wells, and siting improvements and piping installation related to wellhead protection.

THE NEED FOR NATIONAL WELLHEAD PROTECTION FUNDING

Elkhart, of course, is not alone in its groundwater problems. I am sure that most Members of the subcommittee are well aware of similar problems encountered by their constituents, some examples of which are attached to my statement. I want to conclude my testimony by asking that you give new consideration to providing national demonstration funding in fiscal 1990 for the Wellhead Protection program, which was created and authorized by Section 1428 of the Safe Drinking Water Act Amendments of 1986 but has not yet been funded in the appropriations process.

The Wellhead Protection program would provide funds to assist local drinking water protection efforts. The President's fiscal 1988 budget requested $8 million to assist states in the development of local Wellhead Protection programs. Due to fiscal constraints, this was not approved in the FY88 Appropriations bill, and the FY89 budget did not repeat the request. The FY90 budget includes $11.2 million for Section 106 state groundwater protection grants, some portion of which could, if approved, be used in some states to expand protection of highly vulnerable wellhead areas. I hope you will agree that more focused funding, specifically for the Wellhead Protection program, would be appropriate this year.

Elkhart fully concurs with Congress' and EPA's recognition of the need to develop local knowledge and encourage groundwater protection activity at the local level. We have come a long way in our City from the discovery of TCE in 1981 in developing a considerable body of data and experience that we believe would be of interest and useful in other local communities facing recognized or potential groundwater and wellhead protection situations. We still face considerable costs in developing and protecting our new wellfield, and plan to work closely with EPA to seek a portion of any demonstration funds that you are able to provide to the program to assist in implementing our plans, and to share information accumulated through our experience with other communities confronting similar problems.

I am hopeful that the recent budget agreement that seems to mediate somewhat the squeeze that many programs have gone through in the 1980's will also ease the restrictions that you have to struggle with in allocating funds under the subcommittee's jurisdiction. I further hope that your analysis will allow you to provide a moderate amount of fiscal 1990 funds for this promising program that appears sure to pay off in reduced Superfund and other mitigation costs in the future, as well as in increased knowledge and practical experience for further groundwater protection.

Thank you again for allowing me time to address you on this matter, and for you interest and consideration. I will be happy to respond to any questions that you may have.

Senator FOWLER. Beverly Corelle, National Education Association.

Mr. PACKER. I am not Beverly Corelle. She is the president of the Maryland State Teachers Association and had to return back to a meeting in Baltimore.

Senator FOWLER. But it's somebody in Maryland. [Laughter.]

I haven't seen our chairman yet, but you can be assured I'm going to give her greetings from all her constituents. [Laughter.]

What's your name?

Mr. PACKER. I am Joel Packer. I'm a legislative specialist on the staff of the National Education Association and appreciate the opportunity to present our statement today.

Senator FOWLER. Welcome.

ASBESTOS IN SCHOOLS COALITION

STATEMENT OF JOEL PACKER ON BEHALF OF THE NATIONAL EDUCATION ASSOCIATION

Mr. PACKER. In addition to speaking on behalf of the NEA, the recommendations in our testimony have been endorsed by 30 other organizations representing both public and private schools, parents, labor groups, and other environmental organizations, all of whom are part of the Asbestos in Schools Coalition.

My message to you today is very simple. American schools are beset by serious environmental hazards, including asbestos, lead in drinking water, and radon. They must take immediate steps to eliminate these hazards, and they must accomplish this at a time when they are faced with limited resources.

NEA believes that Congress must provide funding that fully meets the authorized levels for Federal programs to eliminate these hazards.

Moreover, EPA needs additional funds in fiscal year 1990 for staff to provide technical assistance, conduct on-site evaluation, and assure compliance with each of these programs.

We commend the Congress for its work so far in setting standards and supporting testing, but these steps are only preliminary to the real work that must be done.

Resources for asbestos abatement are a prudent investment in our Nation's health, but over the past 4 years of funding for this program only 16 percent of the schools seeking assistance under the Asbestos School Hazard Abatement Act have been funded, including only 37 percent of those projects that EPA itself has ranked as the most hazardous.

Most of the asbestos abatement work in the schools will take place in the near future because under another Federal statute, the Asbestos Hazard Emergency Response Act, all schools must begin cleanup of any asbestos they have. This July 9, 1989, is the date in the statute.

We believe that schools that have the worst hazards and the greatest financial need must be provided resources now to help them in that task. EPA's estimate is that it will cost over $3 billion to fully implement the statute requiring cleanup of asbestos, and that 45,000 school buildings nationwide have friable or crumbling asbestos in place.

So we strongly urge you to recommend the full $125 million which is authorized for the ASHA program as it's called in fiscal year 1990, including releasing $15 million that is now sitting in the asbestos trust fund which comes from repayment of previous loans given out to schools.

LEAD IN DRINKING WATER

Another concern we have deals with lead in drinking water. Last year Congress passed the Lead Contamination Control Act which required States and schools to begin a process of testing for and taking care of problems with lead in drinking water in school buildings.

Each year 29,000 children require medical treatment, and 230,000 suffer an IQ loss due to elevated lead levels in drinking water. Nationwide, according to EPA, more than one million water coolers in schools may have lead components or lead parts in them.

Again, Congress passed a statute last year which requires that by this August, States must have plans in effect, and by January 1, 1990, schools must have either repaired or replaced or taken out of service water coolers that have lead in them.

So again in the near future schools will be active in efforts to reduce the lead content of drinking water. Therefore, funding assistance must be provided this year. We would again urge you to recommend the full $30 million authorized for State grants for this program in fiscal year 1990.

Last, the concern we have is about radon. Radon is responsible for some 20,000 lung cancer deaths a year. Only cigarette smoking causes more. We again commend Congress because last year another statute was passed, the Indoor Radon Abatement Act. EPA recently surveyed 130 schools in 16 States and found that at least one room in half the schools had radon levels above EPA's standard, which is four pico curies per liter. Three percent of the school rooms had radon levels of more than 20 pico curies per liter, and one school had a room with radon levels of 136 pico curies per liter, which is the equivalent of smoking 17 packs of cigarettes a day. We don't think schoolchildren should be exposed to these kinds of health hazards.

$3 BILLION PROBLEM

Senator **Fowler**. Let me ask you this, Mr. Packer. With all those good folks over there and all those academics at NEA, you all haven't gotten your heads together to figure out where we're going to get the money for this $3 billion asbestos cleanup, have you?

Mr. **Packer**. Well, we think it's going to need to be a partnership.

Senator **Fowler**. What shall we tax?

Mr. **Packer**. Well, at the local level, and my colleague here, the Mayor, might be able to speak more about it, a lot of schools are doing bond referendums and asking the voters to put up money at the local level to float bonds and some localities and school boards are raising what they call in school terms the millage rate, the taxation rate on property for support of the schools. Schools are having to dip into their existing operational budgets or exhaust all their other maintenance budgets. Some States, New York, Illinois, and a few others have provided money at the State level.

What we're asking is not for the Federal Government to fund the whole program. As I said, it's a $3 billion problem, and we are asking for $125 million. To date the Congress has provided a little bit over $200 million. So we are asking the Federal Government to be a partner.

One additional source of money comes from litigation that has been in place now, and some has been concluded and some is still ongoing, by school boards against companies that manufacture asbestos. There is a nationwide class action suit pending and there are a lot of individual suits, and there is potential for several hundred million dollars there.

Senator FOWLER. Well, keep working on the problem.

Mr. PACKER. Thank you.

Senator FOWLER. Thank you so much, Mr. Packer.

[The statement follows:]

STATEMENT OF BEVERLY CORELLE, PRESIDENT, MARYLAND STATE TEACHERS ASSOCIATION

ON APPROPRIATIONS FOR THE ASBESTOS SCHOOL HAZARD ABATEMENT ACT, LEAD CONTAMINATION CONTROL ACT, AND INDOOR RADON ABATEMENT ACT

Mr. Chairman and Members of the Subcommittee:

I am Beverly Corelle, president of the Maryland State Teachers Association. On behalf of the 1.9 million-member National Education Association, which represents professional and support employees in public elementary, secondary, vocational, and postsecondary schools throughout the nation, I appreciate this opportunity to speak about an issue that is vital to the future health of generations of America's students and school employees: environmental hazards.

The funding recommendations in this testimony have been endorsed by the following organizations, all of which are members of the Asbestos in the Schools Coalition: Agudath Israel; American Federation of State, County and Municipal Employees; American Federation of Teachers; American Public Health Association; California Department of Education; Children's Defense Fund; Council for American Private Education; Council of Chief State School Officers; Council of the Great City Schools; Florida State Department of Education; Laborers International Union of North America; National Association of Elementary School Principals; National Association of Independent Schools; National Association of Private Schools for Exceptional Children; National Association of Secondary School Principals; National Audubon Society; National Federation of Federal Employees; National Network to Prevent Birth Defects; National PTA; National School Boards Association; New York City Board of Education; New York State Education Department; Service Employees International Union; Sheet Metal Workers' International Association; United States Catholic Conference; United States Conference of Mayors; United States Public Interest Research Group; United States Student Association; Washington State Superintendent of Public Instruction; and White Lung Association.

NEA strongly urges this Subcommittee to recommend funding that fully meets authorized levels for federal programs designed to eliminate or significantly reduce the hazards of asbestos, lead in drinking water, and radon gas in our nation's schools. Moreover, the Environmental Protection Agency needs additional funds in FY90 for staff to provide technical assistance, conduct on-site evaluation, and assure compliance for these programs.

Americans may have widely differing expectations about the place the schools have in our society. But all Americans share the belief that America's school buildings — where our young people spend a significant part of their lives — must provide safe and healthful environments. And yet, we know that too often educational facilities are the site of many terrifying dangers. Chief among these are asbestos, lead in drinking water, and radon. It is critical that schools take immediate steps to eliminate environmental hazards. Each day delayed is another day that children are at risk to exposure.

We commend the Congress for taking steps in recent years to bring attention to these hazards, to direct the EPA to establish regulations and provide guidance to state and local governments responsible for public and private school facilities, and to provide resources to assist with testing and abatement activities. And yet, these steps — important as they have been — are only preliminary to the real work that must be done. NEA will not be satisfied, and the Congress should not be satisfied, until all known health hazards in the schools are eliminated. We recognize that this goal can be achieved only through a partnership of federal, state, and local officials, and with the involvement of parents and other community members. But we ask that this Subcommittee and this Congress continue its leadership by providing adequate resources.

Asbestos in the Schools

NEA has testified many times on the hazards of asbestos in the schools. We strongly supported the Asbestos School Hazard Abatement Act (ASHAA) and the Asbestos Hazard Emergency Response Act (AHERA). Each year, we have urged Congress to provide resources to these programs to accomplish their objectives.

The hazards of asbestos are well-known. Its link to cancer and other debilitating and potentially terminal diseases is widely recognized. Its prevalence in school buildings across the nation is well-documented. The legislative responses to this threat to human health and the environment — ASHAA and AHERA — establish a coordinated and comprehensive plan of action by which schools can systematically eradicate the hazards of asbestos.

In our view, the hazards of asbestos in the schools are so widespread and so critical to America's future that the federal government must shoulder part of the financial responsibility. The Reagan Administration repeatedly called for no new funds for ASHAA. The Bush Administration recently followed suit.

Asbestos abatement efforts in America's schools are a prudent investment in our nation's health. And yet, the largest yearly appropriation ever provided for ASHAA — $50 million — is one-twenty-thousandth of the federal budget. From FY85 through FY89, only 16 percent of the 9,704 schools seeking assistance under ASHAA have been funded. Some 2,900 local education agencies (LEAs) have requested almost $1.3 billion in funding for 14,800 asbestos abatement projects, including 5,485 projects — about 37 percent — that were considered Hazard Category I projects by the EPA. Fewer than one-third of these high priority projects have been funded.

Schools now face a new challenge: compliance with AHERA. EPA estimates it will cost schools more than $3 billion to meet their responsibilities under AHERA. Under AHERA, schools must report on their asbestos management plans by May 9, 1989.

By July 9, 1989, all schools must begin to implement asbestos management plans developed under AHERA regulations. Most of the asbestos abatement work in the schools will take place in the next three years. It is, therefore, understandable that for the round of applications just completed, some 1,110 LEAs, representing 4,125 projects in 2,383 schools, have requested $368 million from fiscal year 1989 funds. In other words, schools have requested eight times more than the $45 million available in FY89. More LEAs applied for FY89 funds than in any other year; the number of LEAs applying for FY89 funds is 60 percent of the total number of applications in the first three years of the program. Some 2,555 of these projects, or 62 percent, are rated to be in Hazard Category I by EPA. Funding those projects alone would cost some $123 million. And, if more money were available, EPA could fund projects in Hazard Category II, which must have damaged, exposed, friable asbestos.

NEA strongly urges the Subcommittee to recommend the full $125 million authorized for FY90 for ASHAA. More than any other year, those schools with the greatest asbestos hazards and the greatest financial need must be provided the resources to get the job done. At the same time, since two-thirds of ASHAA funds are in the form of loans which have already begun to be repaid to the Asbestos Trust Fund, Congress must authorize release of those funds to be distributed for new awards. Approximately $15 million will be available in the Trust Fund in FY90, so that Congress would need to provide only $110 million in new FY90 budget authority to provide the full authorized amount for this program. It makes no sense to leave money in the Trust while the problems are so great and abatement actions are at their peak.

Lead in Drinking Water

NEA commends Congress for the passage last year of the Lead Contamination Control Act (LCCA). This measure required EPA to provide guidance to states and localities and authorized $30 million per year for grants to states to help schools and child care centers test for and remedy lead contamination in their drinking water. The Act also contains specific requirements for the testing, recall, repair, and/or replacement of water coolers with lead lined storage tanks or with parts containing lead.

By now, the health hazards of even low-level exposure to lead are well-documented and widely known. Young children are particularly vulnerable because the physical and behavioral effects of lead occur at lower levels of exposure in children than in adults. In the same way, pregnant women are at a high risk from lead exposure because of its effect on the fetus. Overexposure to lead can permanently impair a child's mental and physical development. In 1986, EPA estimated that each year 29,000 children require medical treatment, and 230,000 suffer an IQ loss due to elevated lead levels in drinking water. Comparatively low exposure to lead by children has been linked to damage to the central and peripheral nervous system, learning disabilities, shorter stature, impaired hearing, and impaired formation and function of blood cells. Beginning in the 1970s, Congress and the EPA began to take significant steps to reduce lead contamination from gasoline, paint, and plumbing materials. However, lead in drinking water remains a serious problem because of the use of lead in pipes, solder, and water coolers.

Just last month, the EPA released a list of water coolers known to contain lead-lined tanks or other lead components. EPA identified more than 100 different models of water coolers with lead; nationwide, more than 1 million water coolers may have hazardous lead components. The LCCA requires the U.S. Consumer Product Safety Commission to recall coolers with lead-lined tanks on the EPA list. Here again, additional resources for staffing, testing of coolers, and dissemination of information are needed by both EPA and CPSC. Steps are underway to identify and remove water coolers which contribute to contamination of drinking water in the schools. However, water coolers are not the only source of lead contaminants in drinking water in the schools. In many schools, drinking water is contaminated by lead from the corrosion of lead pipes, solder, fixtures, or other parts of the plumbing system. Moreover, given the water use patterns in schools, which are closed on weekends and over vacations, water that remains stagnant in interior plumbing — even from the close of one school day to the opening of the next — is in longer contact with lead solder or pipes and thus may contain higher levels of lead.

For the near future, state and local officials can be expected to be involved in a high level of activity to reduce the lead content of drinking water. Researchers agree that the current enforceable federal drinking-water standard for lead, 50 parts per billion (ppb), is far too lax. In August 1988, EPA proposed a standard of 20 ppb.

Because school officials must take immediate steps to protect school children from lead contamination, funding assistance must be provided now. NEA urges the Subcommittee to recommend the full $30 million authorized for grants to states in FY90.

Radon Contamination

Public awareness about the hazards of radon is recent compared to knowledge of the dangers of asbestos and lead. Again we commend Congress for taking an important first step in the control of this hazard through the enactment of the Indoor Radon Abatement Act of 1988 (IRAA). And we urge you to recommend the full amount authorized for IRAA programs.

The Indoor Radon Abatement Act authorized $10 million a year to help states set up programs to address the hazards of radon, including public information efforts and grants to schools for testing and abatement work. The Bush Administration did recommend $8 million for this program for FY90. In addition, the Act authorized $1.5 million to EPA to conduct a national survey of radon contamination in schools.

Radon is a colorless, odorless, tasteless, radioactive gas that occurs naturally in soil, rocks, underground water, and air. It is produced by the radioactive decay of radium-226 in the soil and rocks. Radon decay products can attach themselves to particles in the air, and breathing radon decay products increases the chance of developing lung cancer. EPA estimates that radon is responsible for some 20,000 lung cancer deaths a year; only cigarette-smoking caused more cases of lung cancer. As with many other health hazards, young children are more susceptible than adults to the risk of cancer because of their smaller lung volumes and higher breathing rates.

An EPA preliminary survey of radon concentrations in schools, conducted in 16 states and 130 schools, revealed that more than half of all schools surveyed had at least one room with radon levels above 4 pCi/L, the current EPA standard for radon, although even this level can have adverse health effects. About one in five of the individual rooms surveyed had radon levels above 4pCi/L, and three percent of the school rooms had radon levels of more than 20 pCi/L. A school in Tennessee was found to have rooms with radon levels of 136 pCi/L, the equivalent of smoking 17 packs of cigarettes per day!

EPA found that high levels of radon gas occur in some school rooms in all the tested states. It is scheduled to begin its national survey of schools in 1990, but it may be unable to do so without funding. In its initial survey, EPA found that joints or cracks in the foundations of schools may be entry points for radon to enter. In addition, the air conditioning and ventilation systems can be a significant factor, positive or negative, in the ability of radon to build up to hazardous concentrations. And since schools remained closed on weekends and over vacations, radon can build up to hazardous levels.

EPA has developed guidance materials to help schools do effective testing and mitigation work. There are, at present, no federal requirements for testing or mitigation. Since many mitigation methods involved extensive construction, refurbishing, or replacement of air conditioning or ventilation systems, the costs for affected schools is potentially great. But given that the lives of our children are at stake, we cannot seriously consider alternatives to effective radon mitigation.

NEA urges you to recommend the full $11.5 million authorized to carry out the state grant program and the national survey.

Conclusion

America's elementary and secondary schools are faced with at least these three serious health hazards: asbestos, lead in drinking water, and radon. And they are engaged in ongoing efforts to compensate for a reduction, after accounting for inflation, of some $4.2 billion in federal education resources since FY80. They are pressed to add new academic programs, to strengthen existing programs, and to maintain personnel, facilities, equipment, and materials to continue the national drive for excellence in education. And they are attempting to accomplish all this at a time when many state and local economies are flagging and anti-tax fervor is at its height.

Many school officials and state health officials still need guidance and assistance on the extent of these hazards and the best ways to address them. Our experience with asbestos should provide some important lessons. It isn't enough for the federal government to sound the alarm. Strict regulation, enforcement, and resources to help schools comply with those regulations, are three vital components of an effective strategy to reduce health hazards in the schools.

We recognize that the Congress has many difficult choices as it attempts to craft a federal budget that meets both national and economic needs. But we can think of no more compelling national need than the safety of our children. We urge you to give ASHAA, LCCA, and IRAA your full support.

Thank you.

STATEMENT OF DAVID DICKSON, CONSERVATION ASSOCIATE, IZAAK WALTON LEAGUE OF AMERICA

Senator Fowler. David Dickson, the Izaak Walton League.

Mr. Dickson. Mr. Chairman, thank you.

My name is David Dickson, and I'm speaking on behalf of the members of the Izaak Walton League of America for whom I serve as conservation associate.

Our written statement contains our complete list of recommendations for funding for fiscal year 1990 for water quality programs administered by EPA and the States.

Senator Fowler. All those will be included in the record.

NEED FOR COST-SHARE GRANTS

Mr. Dickson. Great. This afternoon I will focus on the need for funding under section 319 of the Clean Water Act for cost-share grants to the States for the implementation of their nonpoint source pollution control programs.

Nonpoint source pollution is the leading cause of nonattainment of designated uses in the waters of the United States today. In 1987, Congress established a new program under section 319 requiring the States to address this problem. The States were to conduct assessments and develop management programs for the control of nonpoint source pollution.

For its part EPA has to review State assessment reports and management programs to assure consistency with the requirements of the Clean Water Act. This review process will also assure that State management programs will indeed make meaningful progress toward addressing this problem.

The other Federal component of this program is the authorization of $400 million over a 4-year period for 60 percent cost-share grants to the States for the implementation of their approved management programs. None of these funds have been provided thus far under the program.

In fiscal year 1990, the nonpoint source pollution control program will be at a critical juncture. The States for the most part have completed and submitted their assessment reports and management programs. EPA anticipates approving or partially approving the majority of these programs in the current fiscal year. Thus, in fiscal year 1990, most of the States will be ready to implement their programs and will be in need of Federal assistance to do so.

Federal funding under section 319 for the implementation of these programs is critical to getting them permanently established within the overall State water quality management framework. If a significant amount of funding is not made available under section 319 in fiscal year 1990, we are fearful that the Nation will have made a false start in addressing this pervasive water quality problem.

In making all of our funding recommendations, including full funding for the construction grants program, we are mindful of the constraints that this subcommittee will likely face in funding all of the program under its jurisdiction.

However, we urge that the committee place funding for the Environmental Protection Agency very high on its list of spending priorities for fiscal year 1990 and provide the funds necessary to protect our environment.

Thank you very much.

Senator FOWLER. Thank you, Mr. Dickson, and for the good work of the Izaak Walton League.

Mr. DICKSON. Thank you, sir, and I'll take my last 30 seconds to commend you on your legislation that you recently introduced.

Senator FOWLER. I appreciate your help.

[The statement follows:]

STATEMENT OF DAVID DICKSON

Madam Chair, members of the Committee, my name is David Dickson, and I am testifying on behalf of the members of the Izaak Walton League of America for whom I serve as Conservation Associate. The League is a nationwide, nonprofit conservation organization dedicated to the protection and restoration of America's natural resource heritage for present and future generations. The League has over 47,000 members in nearly 400 chapters nationwide. For over sixty-seven years the protection and restoration of the nation's water quality has been the League's top conservation priority and remains so today. We appreciate this opportunity to appear before the committee to present our recommendations on funding for water quality programs administered by the U.S. Environmental Protection Agency (EPA) and the states for Fiscal Year 1990 (FY90). Our recommendations are summarized below:

Section 319 Nonpoint Source Pollution Control	$100 million
Construction Grants	$2.4 billion
Section 106 Water Quality Management Grants	$100 million
Water Quality Enforcement	$23.1 million
Chesapeake Bay Program	$13 million
The National Estuaries Program	$13.2 million
Great Lakes Program	$15.9 million
Clean Lakes Program	$15 million
Well Head Protection Program	$8 million

In making these recommendations, we are mindful of the constraints imposed by the federal deficit, and the constraints that this subcommittee will face if its 302(b) allocation is not sufficient to allow funding of all its programs. We are aware of the many important programs central to this nation's domestic agenda that this subcommittee funds. We have been working hard with groups representing all of the interests served by this subcommittee to see that the allocation is large enough to allow the subcommittee to meet the funding needs for all of its programs. However, we view the need to restore and protect the nation's water quality to be critical to that agenda.

In the event the subcommittee does not receive an allocation sufficient to meet all of its programs' needs (a figure we estimate to be $50.8 billion in Budget Authority and $55.4 billion in Outlays) we urge you to place funding for the Environmental Protection Agency very high on your list of spending priorities.

Our specific recommendations are listed below:

Section 319 Nonpoint Source Pollution Control--$100 million

Nonpoint Source Pollution is now the single largest threat to our nation's waters. EPA has estimated that nonpoint source pollution, contaminated runoff and groundwater discharge, is the leading cause of nonattainment of water quality standards in the nation today. According to the most recent national survey conducted by EPA and the states, nonpoint source pollution is responsible for 65 percent of the stream miles for which states reported impairments of water quality; 76 percent of impaired lake acres; and 45 percent of impaired estuary waters nationwide.

In the 1987 amendments to the Clean Water Act, under the new Section 319, Congress established a new action-oriented program requiring the states to address this problem. The 1987 amendments also formally established as a national policy, under Section 101(a)(7), that programs for control of nonpoint source pollution be developed and implemented in an expeditious manner so that the goals of the Act can be met. The program requires the states to assess their waters and to develop management programs to control or reduce specific nonpoint sources of pollution. EPA is required to review and approve state assessments and management programs for consistency with the Clean Water Act.

In addition, to help states establish and implement their management programs, Congress authorized $400 million in cost-share grants to the states over a four year period. To date none of these funds have been requested by the Administration nor have they been appropriated by Congress.

Many have expressed concern that this program is similar to the old Section 208 planning process. They are fearful that the program has the potential of spending large amounts of taxpayer's dollars with little to show in water quality benefits. In fact, the program is designed to specifically avoid ending up as the 208 program did. It is designed to produce meaningful results. The Act requires that for state management programs to be approved, and for states to be eligible for federal implementation grants, they must meet specific criteria to ensure that they will see real progress toward controlling this problem.

This program is at a critical juncture. Utilizing funds provided under Section 205(j)(5) of the Clean Water Act, most states have completed nonpoint source assessments and developed nonpoint source management programs anticipating that federal funding for implementation under Section 319 would be forthcoming. In its justification document, EPA states that it is working toward approval of 52 state and territorial management programs in the current fiscal year. While this number may be optimistic, by the time FY90 begins, we anticipate most states will have received full or partial approval for their programs and will be in need of federal funding under Section 319 for implementation. These cost-share grants are vital for the institutional establishment of these programs within state water quality agencies. While a certain level of state effort to address nonpoint source pollution will continue regardless, using state monies or other funding, much of the staffing and organization put in place with 205(j)(5) funding will be wasted and lost. Part of the fault with Section 208's lack of ability to deal with this problem can be attributed inadequate funding for implementation of controls on nonpoint sources of pollution. Without Section 319 funding, we will have made another false start at progressing toward a viable solution to this problem.

Construction Grants--$2.4 billion

We support and recommend full funding for the Construction Grants

Program. We also recommend that the committee equally divide funding between the Construction Grants Program and the State Revolving Loan Funds. The administration's request of $1.2 billion, $400 million for Construction Grants and $800 million to capitalization of State Revolving Funds, is woefully inadequate. Our recommendation is consistent with Congress' $18 billion phase out of this program. The necessity of fully funding these programs is evident in light of EPA's recent survey that found an estimated need for over $83 billion in municipal wastewater construction or upgrading to meet the goals of the Clean Water Act. That survey also found that 10,835 facilities had water quality or public health problems in need of correction. If states and municipalities are to successfully take over full funding responsibilities to meet the nation's needs for waste water treatment, this program must be fully funded through its termination in 1994.

In addition, Construction Grants set-asides provide critical funding for many state water quality programs such as nonpoint source pollution and the clean up of our nations estuaries.

Section 106 Water Quality Management Grants--$100 million

The Clean Water Act rightfully gives the states many responsibilities for planning, enforcement, permitting, standards setting and monitoring. Section 106 Water Quality Management grants in part help the states to fund their programs to meet these needs. The Association of State and Interstate Water Pollution Control Administrators estimates that the Water Quality Act of 1987 doubled these responsibilities. Last year the committee appropriated $67.1 million of a $75 million authorization for this program. This year the Administration has requested $83.2 million. Much of these funds, however, are earmarked for nonpoint source pollution control, groundwater and wetlands protection. In that state agencies are in most cases the prime implementers of the Clean Water Act, and have tremendous responsibilities imposed by the Act, we favor $100 million in funding for Section 106 grants. We realize that this is substantially above the authorized level, but due to the increased responsibilities the states must carry out, this level of funding is justified. In addition, we recommend that rather than earmarking some of this funding for the implementation of state nonpoint source pollution control programs, funding for that purpose should be made available under Section 319 of the Act as previously discussed. In addition we recommend that funding for Well Head Protection be appropriated under the Safe Drinking Water Act.

Water Quality Enforcement--$23.1 million

Key to the effectiveness of our ability to protect and restore America's water quality is EPA's ability to enforce the requirements of the Clean Water Act. President Bush has often stressed the need for strong enforcement in his statements on the environment. In 1981 this program had 538 FTEs; for FY90 the administration is requesting only 395 FTEs. This represents 28 percent fewer personnel than the agency had in 1981. We recommend an increase of $3.8 million for a total of $23.1 million for enforcement.

Great Lakes Program--$15.9 million

The restoration of water quality of the Great Lakes is tremendously important to our members, many of whom are actively involved in a number of efforts to achieve that goal. The Administration has requested $11.4 million for the Great Lakes program in FY90. We recommend that the committee provide full funding of $15.9 million for this program.

The Chesapeake Bay Program--$13 million

Chesapeake Bay is the nation's largest and historically the most productive estuary. It has been singled out for special effort by both the past administration and in the 1987 Amendments to the Clean Water Act, by

Congress. EPA has an ongoing program to support and coordinate local and state efforts to restore Chesapeake Bay. The Water Quality Act of 1987 formally established the program as a part of the Clean Water Act. We ask that the committee fully fund the program in FY90 by providing $13 million so that this program can continue to help states improve the quality of the nation's largest and most important estuary.

The National Estuaries Program--$13.2 million

Another extremely important program authorized by the Water Quality Act of 1987 is the National Estuaries Program under Section 320 of the Clean Water Act. Estuaries are among the most productive of the nation's waters. We support the administration's request of $13.2 million for this program in FY90. We realize that this is over the $12 million authorization and the Administration requested this level of funding to make up for a reduced contribution from the set-aside in the Construction Grants program. In the event that the subcommittee provides more funding for Construction Grants program, we would urge that a minimum of $12 million be provided under Section 320 for this program and that total funding not be allowed to drop below the total $15.2 million level. We would also like to express our support for EPA's Near Coastal Waters initiative.

Clean Lakes Program--$15 million

America's lakes are vital to outdoor recreation and are a resource important to our members. The Clean Lakes Program is critical to protecting and restoring lake water quality. The program helps assess and remedy problems such as siltation, eutrophication, toxic pollution and acidification of lakes across the nation. The administration has requested only $2 million for this program in FY90 after Congress provided $12 million in FY89. The program carries an authorization of $30 million and we urge that of that amount $15 million be appropriated. At a minimum we recommend that this program be funded at this year's level.

Well Head Protection Program--$8 million

In addition to funding for water quality programs, we are also concerned about the protection of the nation's groundwater resources and support implementation of the Well Head Protection Program to protect this vital resource under the Safe Drinking Water Act. Rather than using Section 106 Water Quality Management grants to fund this program as the Administration has requested, we recommend that it be funded under Section 1428 of the Safe Drinking Water Act.

In closing, I would like to again urge that funding for water quality programs be placed high on the Committee's list of funding priorities for FY90. We thank you for this opportunity to present our views and for your continued support of clean water.

Senator FOWLER. I thank all of you on the panel, especially those of you interested in water and it's contamination.

As we go through we'll begin the hearings on the water package this fall and will certainly seek your specific comments and suggestions.

Even after you go through 20 drafts and get it into a bill form, it's still a draft for purposes of amending and making better and tighter. So I would like very much to have your suggestions.

I thank all of you very much.

Mr. Ernest Shea, Mr. Richard Gabriels, Mr. Scott Sklar, and Mr. Matthew Scott.

Mr. Ernest Shea of the National Association of Conservation Districts.

STATEMENT OF ERNEST C. SHEA, EXECUTIVE VICE PRESIDENT, NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS

Mr. **SHEA**. Good afternoon, Senator, and thank you very much. My name is Ernie Shea with the National Association of Conservation Districts.

Our association represents the 3,000 local soil and water conservation districts across the country. The conservation districts coordinate and carry out comprehensive natural resource management programs at the local level, and they provide leadership to a wide variety of Federal, State, and local conservation programs.

NONPOINT SOURCE POLLUTION CONTROL

One of the activities that our members have been actively involved with for a number of years has been nonpoint source pollution control, and that's the main reason for our appearing before you today.

On the first page of our written testimony we have listed the EPA programs that relate to nonpoint source control, and we have provided a recommended funding level for each. I would point out, Senator, that many of these programs directly complement USDA's initiatives to provide water quality protection from agricultural activities. They go hand in hand and they clearly do not duplicate but they complement one another. So we are very supportive of the EPA programs.

The main program that we're interested in receiving funding for is section 319. We are also recommending that that program be funded at the authorized level of $100 million. The act was passed 3 years ago, and this is the third year it has not been funded and, as some of the previous individuals have testified, we, too, are becoming concerned that we are losing momentum.

Nonpoint source pollution is a well documented problem, we know what it is, we know where it comes from, and we know how to solve it. EPA's agenda for the future report that they released earlier this year points out that 45 percent of the problems of our impaired estuaries is due to nonpoint source, 76 percent of the problems in our impaired lakes is due to nonpoint source, and 65 percent of the problems in our impaired rivers is directly related to nonpoint source, and agricultural activities clearly contribute a major load into the total nonpoint problem.

We believe that we are at the point in time where we don't need to continue to study and evaluate the nonpoint problem.

Senator **FOWLER**. Amen.

Mr. **SHEA**. As I pointed out, we know how to solve it, and now we need to get on with the business of implementing it. States are anxious to get going and the management plans are being developed. They are not waiting for Federal funds, but they clearly need Federal funds to help accelerate what they are doing.

Last year alone, 31 States have committed over $100 million for agricultural cost share programs to address nonpoint source pollution, and those are only the State programs that our local districts work closely with. I'm sure there are other State funds that are committed for other nonpoint programs.

So for this reason we would urge the committee to appropriate the $100 million that has been authorized for the Clean Water Act nonpoint activities.

Several weeks ago we sponsored a national conference in St. Louis. The conference drew over 500 Federal, State, and local program managers, citizens, and they all came away with the strong recommendation that we accelerate implementation efforts and move away from planning.

We need to heighten public awareness, and people need to understand that it's a people problem, there is no one segment of society that doesn't contribute to the nonpoint loading and what we need are some resources to help accelerate the effort.

CALL FOR MORE AGGRESSIVE LEADERSHIP

In addition to the need for funding, there are two issues we would like to call to your attention, and they relate to the way in which EPA is administering the nonpoint programs. We clearly think that EPA can provide much more aggressive leadership on nonpoint, and we are hopeful that Bill Reilly will provide that under his administration.

The two problems are these. The first relates to EPA's decision not to allow States to use funds they commit for State cost-sharing for the matching dollars for section 319. We do not understand the logic in that at all. The State feels it's important enough to commit cost-sharing dollars for nonpoint source, and we think they should be allowed to count those as part of their match against section 319.

The second and last point I would mention is that the way in which EPA is calculating the amount of funds that can go into nonpoint source control programs through section 205(j)(5) we think is not in the manner that Congress intended. Under that particular provision States are allowed to use 1 percent of their State setaside of construction grant for nonpoint source.

EPA and OMB are only calculating 1 percent of the direct construction grant funds. They are not calculating the one percent on the amount of Federal funds that are going into the State revolving loan programs. That has dramatically reduced the amount nonpoint source funds that can be utilized at this point in time, and those are dollars that are already appropriated. So we would urge this committee to direct EPA to correct both of those problems.

Senator FOWLER. Thank you, Mr. Shea. Very good and very well done.

[The statement follows:]

STATEMENT OF ERNEST C. SHEA

Mr. Chairman, members of the subcommittee, my name is Ernest C. Shea and I am the Executive Vice President of the National Association of Conservation Districts. I appreciate the opportunity to testify today in support of federal appropriations for EPA's nonpoint source pollution abatement programs.

The following chart lists several of the EPA programs which relate to nonpoint source pollution control. NACD's recommended funding level for each is included.

ENVIRONMENTAL PROTECTION AGENCY NONPOINT SOURCE PROGRAMS

Program	FY 89 Congress Enacted	FY 90 Administration Proposal	FY 90 NACD Recommendation
		(In Millions)	
Sec. 205 (j)(5)	10.7	6.8	23
Sec. 319 NPS Grants	0	0	100
Water Quality Management (205j)	21.4	16.5	23
Clean Lakes Program	12.5	2	15
State Program Grant (Sec. 106)	67.1	83.2	72
Sec. 304(K) NPS Tech. Assistance	0	0	45
Sec. 104 (NPS Research)	0	0	10
Sec. 115 (In Place Toxics)	0	0	10
Sec. 118 (GL Phosphorus Reduct.)	11.5	8	21.5

All of these programs represent components of EPA's national strategy to combat nonpoint source pollution.

Our association represents nearly 3,000 local conservation districts in this country and the more than 15,000 men and women who serve on district boards. Conservation districts are independent units of state government that are charged with coordinating and carrying out comprehensive natural resource management programs at the local level. Although best known for their work in the area of cropland erosion control, conservation districts are also actively involved with forest and rangeland management, wetland protection and enhancement, urban sediment and erosion control, wildlife and fish habitat management, and nonpoint source pollution abatement programs. The latter is what brings me before this committee today.

NPS pollution represents the last major barrier to achieving the original goal of the 1972 Clean Water Act. While achievements in controlling point source of pollution have resulted in a substantial improvement in the condition of the nation's surface waters, only limited progress has been made in controlling nonpoint source pollution (NPS). EPA's 1986 National Water Quality Inventory: Report to Congress documents this fact and points out that most of our remaining surface water, quality problems can be directly attributed to NPS. In addition, the agency's Nonpoint Source Agenda For The Future Report which was released earlier this year, points out that 45% of the water quality problems in our impaired estuaries is directly related to NPS; as it is in 76% of our impaired lakes and 65% of our impaired rivers.

Although NPS is a large and complex problem, it is a problem for which solutions do exit. We now know that leaking septic and underground storage tanks, agricultural activities, stormwater runoff, urban growth, mining operations and other activities of man contribute to the NPS problem. We also know that through the use of the best management practices and better planning, NPS pollution can be effectively controlled.

The 1987 amendments to the Clean Water Act set the framework for our national NPS strategy. Primary responsibility for NPS control was delegated to state and local governments and EPA was directed to support and assist states in implementing their programs. The Act also authorized the appropriation of $400 million over 4 years to help states defer some of the costs of implementing these programs. Unfortunately, two years have passed since these amendments were enacted, and still no funds have been appropriated for this important program. While we have a solid plan for attacking the problem, we lack the resources that are needed to get the job done.

Despite the fact that federal resources through section 319 have not yet been made available for this major nationwide initiative, NPS programs have been moving forward at the state and local level. As of this date, 36 states have submitted their NPS assessment reports to EPA for approval and 23 have submitted their proposed management programs. Had federal funding been made available at the time the act was reauthorized two years ago, we are confident the vast majority of states would have already submitted their management plans for approval, and we would have been well into the implementation phase of the program.

One indication of the states' commitment to NPS pollution control can be seen in the amount of funds they have appropriated for agriculturally related NPS programs. Last year alone, 31 states provided over $100 million for cost-share programs and other financial incentives designed to help farmers install best management practices which protect water quality. Copies of a report summarizing state agricultural cost-share and other financial incentive programs have been provided to the committee. While not all of these programs were originally designed to address NPS problems, most directly complement ongoing state water quality protection programs.

Several weeks ago our association sponsored a National Nonpoint Source Pollution Control Conference in St. Louis, MO. The conference brought together nearly 500 federal, state and local officials, scientists and citizens who desired a better understanding of the practical applications of nonpoint source control programs.

In addition to exchanging useful information on successful strategies, the conference participants identified three things that were needed for our collective nonpoint pollution efforts to be successful. These three items were: Expanded federal resources; heightened public awareness of the problem; and, better coordination of effort among the federal, state, and local NPS management agencies and the public at large.

This is the third year in a row our association has testified before this committee in support of funding for NPS control programs. While we have achieved progress during this period in developing and finalizing our plans and strategies, we haven't been able to document much progress in implementing these plans. Clearly, the lack of adequate federal financial support for NPS pollution abatement remains the number one impediment to the implementation of our control strategies and achieving the goals of the Clean Water Act.

NACD urges this committee to address the funding needs for nonpoint pollution control programs this year. We specifically recommend that you appropriate $100 million for section 319 in FY 90. While this amount will not be sufficient to match all of the state funds that have been committed for nonpoint control programs, it will allow many states to get programs started, and help strengthen existing state efforts. If nothing else, it would send a strong signal that the federal government is ready to move forward and seriously address nonpoint pollution.

We also recommend that you appropriate $45 million under section 304(k) for additional NPS program work. Further, $25 million of these funds should be transferred to the Soil Conservation Service for related NPS technical assistance activities. These resources would be used by SCS to assist states in implementing the agricultural components of their 319 management plans. In addition, we recommend that $20 million be allocated to the Great Lakes Program for sediment and erosion control activities in the Great Lakes basin.

Another important issue I want to comment on deals with the intent of Congress concerning matching funds for federal NPS grants. Section 319 requires states to match federal funds on a 60/40 basis and to demonstrate that they are maintaining their earlier efforts in NPS control. Most states consider their soil conservation and erosion control programs, including cost-share programs, as major components of their overall NPS abatement strategy.

In finalizing their NPS implementation guidelines, EPA has determined that state cost-share programs can not be counted towards this required match or a state's maintenance of effort. The agency has reasoned that since Congress stipulated that federal funds could not be used for cost-sharing (except for demonstration projects), then state cost-share funds can not be counted as part of a state's match.

We disagree with this determination because it fails to recognize the financial contribution and leadership that these states have made in controlling nonpoint pollution. We urge you to include language in your report directing EPA to include state soil conservation program funds, including cost-share funds, as counting towards a state's NPS grant match requirement.

I also want to point out a concern we have with the way EPA and OMB are calculating the state set aside funds which can be used for the preparation of nonpoint assessment reports and for the development and implementations of NPS managements programs. It was our understanding that Congress directed EPA to set aside 1% of each state's total construction grant allocation for these activities. EPA, however, has been calculating the set asides only on the grant portion of the total construction grant allocation, excluding the portion of the allocation used for capitalizing the State Revolving Loan Fund. The effect of this decision is that the amount of funds available to states, under section 205(j)(5) for NPS activities has been dramatically reduced. We urge this subcommittee to direct EPA to calculate set aside funds using the total amount of funds appropriated for construction grants including those funds earmarked state revolving loan programs.

In closing, I would like to call to your attention the other EPA programs for which we have provided FY 90 funding recommendations. Each of these programs represents an important component in our regional or national NPS control efforts and I would urge the members of the committee to carefully examine each.

Although the NPS problems of this nation represent a major challenge, we are confident that we have the expertise and the will to accomplish our goals. What we lack are the resources to match the efforts that are being mounted by state and local units of government. This committee can effectively address this problem by appropriating the necessary funds to strengthen the federal capacity to control nonpoint source pollution.

Thank you for allowing our association to share our views with you on this important subject.

STATEMENT OF RICHARD GABRIELS, ASSOCIATED GENERAL CONTRACTORS OF AMERICA

Senator **Fowler**. Mr. Richard Gabriels, Associated General Contractors of America.

Mr. **Gabriels**. Senator Fowler, my name is Dick Gabriels. I'm a construction contractor from Massachusetts. I have spent the better part of my career building those wastewater treatment facilities and pumping stations and collection systems that we so badly need and have had under construction.

The facilities I have built and been involved in have significantly enhanced the environment and I'm certainly proud of that achievement.

I am here today on behalf of the Associated General Contractors of America which represent more than 8,000 general contracting companies nationwide employing some 3.5 million people.

I appreciate the opportunity to be here today to present AGC's concerns about inadequate funding for EPA's construction grants program. When Congress passed the Water Quality Act, the very clear message was sent that clean water is an important factor in the quality of life and remains a very vibrant national priority.

PHASEOUT OF FEDERAL PROGRAM

In passing that legislation tough choices were made. It was decided that the best way to continue clean water is by removing the responsibility for funding of this effort from the Federal Government and giving it back to the States. To ensure that previous accomplishments would not be undermined and that progress would continue, a rational, reasonable phaseout of the Federal program was instituted. That phaseout called for a gradual reduction in the Federal grants and for States to establish revolving loan mechanisms to fund the program into the future.

Federal seed money was to be provided to help the States establish their loan programs. States were required to provide a 20 percent matching share. Minimum funding levels were established to ensure continuity and a smooth transition.

Unlike the existing construction grants program, the revolving funds will eventually be self-perpetuating. Local governments will be required to establish user charge systems to pay back the loans. The repayments will go back into the loan funds and thus providing money for future clean water needs, indeed, a creditable way of doing things.

Unfortunately, this program has been subject to continuous underfunding since 1987. Over the past 3 fiscal years, $1.3 billion has been cut from the authorized levels contained in the Water Quality Act. The administration's budget proposal for fiscal year 1990 requests only one-half of that authorized funding and thus cutting an additional $1.2 billion from the minimum funding level.

While AGC recognizes the deficit situation Congress is currently grappling with, we must point out two factors which make it particularly unwise to make further cuts in clean water funding.

First, if the State revolving loan programs are not successful in continuing clean water progress, it is conceivable that once again the Federal Government will be asked to provide the necessary funding and that, in other words, is pay now or pay a lot more later.

Second, wastewater treatment is a major element in the Nation's infrastructure. Studies have demonstrated the positive ripple effect of infrastructure spending on the Nation's gross national product. Infrastructure spending should be viewed for what it is, that is an indispensable investment in this country's future.

The AGC recommends that Congress provide the full $2.4 billion in funding authorized for the EPA construction grants program in fiscal year 1990.

In closing, I must share with you, Senator, that it is now possible, for example, for us to go to Lake Erie and catch our limit of walleye during the season. That was not the case 25 years ago when we started this.

Thank you very much.

Senator **FOWLER**. Well, I do know of that. We have had the same experience in the Potomac now. We have made tremendous progress if we've just got sense enough to keep going and not slip back and have to start all over again.

Mr. **GABRIELS**. Yes, sir.

Senator **FOWLER**. Thank you, Mr. Gabriels, very much.

[The statement follows:]

STATEMENT OF RICHARD GABRIELS

The Associated General Contractors of America and its 105 chapters nationwide represents more than 32,500 firms, including 8,000 of America's leading general contracting companies which are responsible for the employment of more than 3,500,000 individuals. These member contractors perform more than 80 percent of America's contract construction of commercial buildings, highways, heavy, industrial and municipal-utilities facilities.

AGC appreciates the opportunity to present its concerns on the important topic of funding for the EPA construction grants program.

AGC calls on this subcommittee to provide the full $2.4 billion in funding authorized for the EPA construction grants program for FY 1990. Anything less will seriously undermine the smooth transition of this federal program to the states and constitute a major setback to efforts to meet our nation's clean water needs.

When Congress passed the Water Quality Act of 1987, a very clear message was sent to the American public. The message was that clean water is an important factor in the quality of life and remains a primary goal that this country is committed to achieving. In passing that legislation, tough choices were made. It was decided that the best way to continue progress towards the clean water goal is by removing responsibility for the funding of this effort from the federal government and giving it to the states. To ensure that previous accomplishments would not be undermined and that progress would continue, a rational, reasonable phaseout of the federal program was instituted. The phaseout called for a gradual reduction in federal grants and for states to establish revolving loan mechanisms to fund the program into the future. Federal seed money was to be provided to help states establish their loan programs. States were required to provide a 20 percent matching share. Minimum funding levels were established to ensure continuity and a smooth transition.

Unlike the existing construction grants program, the revolving loan funds will eventually be self-perpetuating. Local governments will be required to establish user charge systems to pay back the loans. The repayments will go back into the loan funds thus providing money for future clean water needs. AGC strongly supports this Congressional effort to continue progress toward improved water quality by compelling local governments to meet their obligation to pay the costs involved. This obligation of local governments is conditioned, however, on the federal government meeting its obligation to ensure that initial capitalization funds are provided.

Unfortunately, this program has been subject to continuous underfunding since 1987. Over the past three fiscal years $1.3 billion has been cut from the authorized levels contained in the Water Quality Act. The Administration's budget proposal for fiscal year 1990 requests only half of the authorized funding, thus cutting an additional $1.2 billion from the minimum funding level.

AGC is seriously concerned that clean water progress will be set back substantially if this underfunding is continued. Already there are signs that this is happening. EPA 's 1988 Needs Survey, which estimates the capital costs to build publicly owned municipal wastewater treatment facilities to comply with the requirements of the Clean Water Act, documents $83.5 billion in facility needs. After accounting for inflation, this represents a nearly $3 billion increase in needs since the last Needs Survey was reported in 1986.

This is not encouraging news. While AGC fully recognizes the deficit situation Congress is currently grappling with, we must point out two factors which make it particularly unwise to make further cuts in clean water funding. First, if the state revolving loan programs are not successful in continuing clean water progress it is conceivable that once again the federal government will be asked to provide the necessary funding. The American people will demand that the funds be provided. In the long run the federal budget is better off providing the needed funds today to ensure that state programs are successfully implemented.

Second, wastewater treatment is a major element in the nation's infrastructure. Studies have demonstrated the positive "ripple effect" of infrastructure spending on the nation's gross national product. Infrastructure spending should be viewed for what it is, an indispensable investment in this country's future.

The Associated General Contractors of America recommends that Congress provide the full $2.4 billion in funding authorized for the EPA construction grants program in FY 1990.

STATEMENT OF SCOTT SKLAR, EXECUTIVE DIRECTOR, SOLAR ENERGY INDUSTRIES ASSOCIATION

FUNDING FOR SOLAR CONCENTRATION

Senator **Fowler**. Last but not least, Mr. Scott Sklar.

Mr. **Sklar**. Thank you, Senator.

The solar industry is asking for $350,000 for EPA, not million, thousand, for two things.

First, one-half of it to be cost-shared with a new breakthrough in solar research. We have been able to prove under DOE funding that solar concentration can remove dioxins, paint solvents, petroleum products, and industrial solvents from water without any dangerous by-products.

The research has been conducted at Sandia National Labs with DOE and the industry, a whole new range of concentrators, and it is the sunlight not the heat that is breaking down the by-products.

It meets EPA acceptable levels, and have EPA technical people witnessing. The problem is we can no longer spend DOE money on a technological spinoff that is related to the environment. DOE does not have that authorization.

They have agreed to allow us to use their facilities and work with the industry on the technology if the EPA has some funds to contribute to the actual validating and working with us to make sure it meets their consideration. That would take about $175,000. We think we can commercialize the technology by 1992, and it has profound implications.

The second part, the other $175,000 has to do with actual EPA analysis to show that solar plants can actually offset quantitatively emissions. Right now utilities under the Clean Air Act cannot build new power plants even if they are solar under certain containment areas. We think that's ridiculous. Obviously, if you have emissions problems you want to build solar plants.

I brought a picture of a photovoltaic plant in Alabama in our private sector and 200 megawatt plants in California with solar steam.

I would like to point out the world's largest photovoltaic manufacturer is in the grand State of Maryland, and the largest solar thermal powerplant on the east coast is in the great State of Georgia.

I know the budget is tight, but I think the $350,000 would be used very well. It would be cost-shared dollar per dollar with DOE. It's a one-time request and it would add measurably to commercializing our technology.

Thank you, sir.

Senator FOWLER. Thank you, Scott, very much.

[The statement follows:]

STATEMENT OF SCOTT SKLAR

INTRODUCTION

The Solar Energy Industries Association (SEIA), the national trade organization of the photovoltaics and solar thermal manufacturers and component suppliers, urges the Subcommittee to appropriate $350,000 in FY'90 to be equally cost-shared with the U.S. Department of Energy for environmental analysis and interagency/industry research. This action provides urgently needed direction to more easily commercialize United States solar and renewable energy research & development and enhance current applications.

The U.S. solar industry is asking that a small amount of Environmental Protection Agency (EPA) funds be directed to:

- allow EPA to provide analysis of the solar and renewable energy industries on the extent these technologies can both technically and economically contribute to offset conventional energy production and offset or displace emissions and wastes from conventional energy applications
- to cost-share ongoing applied research in a recent breakthrough using solar concentration to breakdown toxic and hazardous wastes which has already been demonstrated as effective in breaking down dioxins, CFC's and solvents in water, and
- to assist industry in providing analysis to promote further utilization solar and renewable energy by resolving short and long term environmental regulatory impediments

While U.S. energy policy has generally ignored solar energy development, our international competitors sensing a vacuum have steadily increased their solar energy research, development, and export assistance programs. And while the United States was the acknowldged leader of all solar technologies in the 1970's, we are gradually losing our technical edge due to an era of indifference and lack of foresight. Federal funding for solar programs dropped precipitously over the last eight years as the chart on the following page shows:

U.S. Department Solar Energy Research and Development Budgets in FY'81 & FY'89: Actual Appropriated Levels and Current FY'90 OMB Recommendations

PROGRAM	FY'81	FY'89	OMB-FY'90
PHOTOVOLTAICS	$153.2	$35.5	$25.0
SOLAR BUILDINGS	$74.9	$5.4	$4.2
SOLAR THERMAL	$119.9	$15.0	$13.0

Since the solar energy R&D programs are at minimum funding levels, additional resources are necessary to integrate solar in ongoing environmental policy deliberations, as well as encourage new environmental spinoffs of ongoing solar research which should be utilized.

The industry proposal enhances these solar programs cut severely over the years, encourages greater industry/government cooperation, and establishes short term analysis essential to utilize the federal solar programs to meet our worldwide and domestic environmental goals. These initiatives must pass while major solar breakthroughs are in progress and urgent environmental goals must be met in regard to global warming, acid rain, and emissions goals in federal containment areas. Our country needs to position itself in the 21st century as a technological leader in new applications that are renewable, increase world productivity, and deter global climate change.

THE PROBLEM

Currently, the Environmental Protection Agency (EPA) has limited interaction with the solar and renewable energy industries, little involvement with research supported by the U.S. Department of Energy, and has developed absolutely no generally-accepted analysis to determine to what extent, in fact, can solar and renewable energy applications can offer to offset emissions and wastes. Unless these generally -accepted guidelines are incorporated into ongoing EPA analysis, neither the country or our industries will be adequately considered as potential contributors in future policy development and implementation. A national consensus on the social costs of conventional energy must be developed and considered in federal and state energy and environmental regulatory and budget processes.

During 1989 an important undertaking by the Solar Energy Research Institute (SERI), Sandia National Laboratories (SNL) and the U.S. solar energy industry to prove whether computer modeling was indeed correct in that use of concentrated sunlight can breakdown toxic wastes beyond conventional technology in a more efficient and environmentally-benign fashion. Tests conducted by Sandia National Laboratries proved that the newest reflectors and receivers developed by U.S. industry with the support of the U.S. Department of Energy (US/DOE) can play an important role in creating an entirely new industry.

The press briefing paper, attached, describes the potential of the use of high solar flux to breakdown wastes to EPA-acceptable levels without dangerous byproducts as with incineration. More active EPA involvement is necessary to supplement ongoing US/DOE, federal laboratory, & industry efforts to bring this technology to the market place. With minor EPA-involvement in an activist sense, these technologies can be brought to the marketplace at least two years earlier.

The final component or guidelines for these monies would for EPA to assist industry on a case-by-case basis in meeting national or state mandated environmental guidelines that may hamper further commercialization. Analysis at EPA laboratories or coanalysis with US/DOE laboratories on emission, energy byproducts and resource assessment are very important to help national, state and local enviroinmental planners and regulators make hard decisions on energy utilization and offsets. Both our association and those of other renewable trade associations have important needs if the Subcommittee will allow a minimal amount of funds be directed towards these issues. As the chart on page four shows, solar and renewable energy resources, excluding hydropower, now produce nearly 8,000 megawatts of utility-grade electricity. Further enhancement of these technologies can double this amount in five years.

CONCLUSION

The United States solar energy research and development program have been an outstanding success even through disinterest, budget cuts, and low energy prices. Solar water heating technologies are fully integrated into the marketplace with some utilities instituting incentive programs for peak load shaving. Over 200 megawatts of solar thermal power technologies provide utility-grade electricity for over 150,000 homes with new generations of technology that will be lower cost. Photovoltaic costs have come down ten fold in a decade and the program has had over twenty efficiency records in 1988 alone! As research increases, solar energy costs will be lowered and market penetration will significantly increase.

Solar energy technologies can reduce greenhouse gas emissions significantly by over 30 percent in the building sector which which accounts for 35 percent of our energy, by over 20 percent in the utility sectory for peak power and by 10 percent for baseload generation which accounts for 25 percent of our energy, and for remote power applications which account for 5 percent of U.S. energy use. (Over 50 percent of Third World energy use.) The chart below illustrates solar and renewable energy impact in less than fifteen years:

RENEWABLE ELECTRIC ENERGY UTILITY GENERATION
IN THE UNITED STATES AS OF MAY 1989

Anaerobic Digestion	17.94 MW
Geothermal	2211.85 MW
Landfill Gas	49.82 MW
Municpal Solid Waste	630.60 MW
Photovoltaics	16.10 MW
Solar Thermal Power	201.25 MW
Wind	1500.00 MW
Wood/Agric. Wastes	3189.26 MW
TOTAL:	7816.82 MW

Note: Expressed in megawatts (MW). Does not include approximately 73,000 MW of hydropower nor include approximately 1896.75 of renewable energy plants under construction, or solar water heating and other passive solar and energy conservation measures offsetting electricity.

The Solar Energy Industries Association (SEIA) urges the Subcommittee to support our request for $350,000 for FY'90. I caution the Subcommittee that failure to do so will cause inordinant delays of new technologies entering the market, incomplete policy analysis, and unnecessary limitations for increased solar and renewable energy use.

Joint ventures are an essential component to this proposal and have been shown as effective by our international competitors particularly in Germany and Japan. However, the Congress must be aware that the U.S. solar energy industry is a very young and small industry. The vast majority of solar companies are less than fifteen years old and are small businesses. Therefore, industry must be supported by the federal agencies most able to further analysis and generic research.

On behalf of the Solar Energy Industries Association, I can assure the Subcommittee that the benefits will far outweigh this small funding request. Thank you.

SOLAR TECHNOLOGIES SUCCESSFULLY REDUCE HAZARDOUS WASTES

Scientists at the Solar Energy Research Institute (SERI) and Sandia National Laboratories (SNL) have achieved a major technology breakthrough by using solar energy to destroy hazardous wastes, meeting the tough environmental standards set by the Environmental Protection Agency (EPA).

Though solar thermal technologies were originally developed to produce electricity and heat, researchers have found that sunlight can be concentrated into intense beams of energy up to 60,000 times normal sunlight, developing temperatures that can approach that of the sun (approximately 6,000 degrees C). These beams have the capability of destroying hazardous chemicals.

Toxic chemicals have been destroyed to 99.9999%

Using the U.S. Army solar furnace at White Sands Missile Range, researchers have destroyed samples of dioxin, one of the most toxic chemicals known, to more than 99.9999%. In other words, less than one-millionth of the original sample remained after each test. You can picture this by thinking of a swimming pool measuring 40 feet by 20 feet by six feet deep, full of dioxin. After solar exposure, less than 1/2 cup of the pollutant would have remained in the pool!

Test results have shown that by exposing a sample of hazardous waste to solar heat, destruction efficiencies can be increased by at least 10,000 times over that expected from heating alone. It also appears that solar heating produces less of the harmful chemicals often created as products of a normal incineration process. Because soil that has been contaminated with dioxin requires large quantities of fossil fuel to burn completely enough to meet EPA regulations, the solar approach is considerably less expensive and eliminates air emissions that are themselves of environmental concern.

The U.S. produces more than 265 million tons of toxic wastes each year!

The significance of this research is highlighted by the fact that the United States annually produces more than 265 million tons of toxic wastes -- that's one ton for every person in the country -- and only five million tons of this are incinerated or recycled. The rest ends up in our environment, either stored on site, disposed of in landfills, or dumped in the ocean.

Furthermore, the quantity of hazardous chemicals produced is increasing greatly every year. During America's first 200 years, for example, we produced less hazardous wastes that we did just during the current decade. And now we're seeing the results of our environment straining to absorb this avalanche of waste. Nearly one-third of the country's large public water supplies are contaminated beyond EPA safe levels. The Department of Energy has estimated that it may cost more than $100 billion to clean just its own sites. And as the EPA and other regulatory agencies move toward eliminating all landfilling of hazardous wastes, American industry is finding that it must treat wastes and render them harmless before disposition, creating the need for new technologies to help stop this major threat to our environment.

Solar energy can alter chemical reactions

The use of the solar process resulted from research that found that solar beams have unique capabilities to alter chemical reactions. Beams are made up of radiant energy called photons that have different energy levels. The shorter wavelengths are the most energetic, with the energy level decreasing as the wavelengths become longer. It is the mixture of high and low energy photons that allows the solar beam to attack chemicals so efficiently. Together the two types of photons produce sufficient energy and heat to destroy hazardous chemicals.

High temperatures are essential in the process. Researchers found that very little of the dioxin was destroyed until temperatures of 600 C were reached, and by 750 C, about 98% of the sample was destroyed. When the 99.9999% destruction level was reached, only one part of the material out of one million remained. SERI researchers are continuing to study the effects of the solar beam on chemicals, leading to a better estimation of the potential of concentrated solar energy on the destruction of hazardous wastes.

Solar energy can also clean contaminated water

While these studies on chemical waste continue, federal researchers and U.S. industry researchers are also looking at solar decontamination of water. Because even small quantities of chemicals such as pesticides and organic solvents can make water unfit to drink, this area represents another major environmental hazard facing the nation. Studies have found that the high energy photons in the solar beam are absorbed by chemicals in water, causing the chemicals to decompose into components that can easily be treated. This is actually the same basic process by which a polluted river flowing slowly through sunlit fields can partially cleanse itself as it makes it way to the sea. Scientists have accelerated the decontamination process by concentrating the solar energy and adding a catalyst, which makes the water less transparent to the sun.

SERI researchers are now exploring techniques to increase the efficiency of solar decontamination of water, concentrating on determining the effect of increasing solar concentration and catalyst development. Unlike other decontamination processes which transfer the hazardous chemicals to another medium such as the air, solar energy totally destroys the pollutants.

Summary

In addition to the advantages of solar decontamination described above, the modular nature of solar energy systems makes them suitable for almost any size requirement. Small systems can be installed on the site of the original producer, in fact, enabling industry to destroy chemicals at their origin. This not only minimizes transportation of the waste, it also can avoid further liability faced by industry for chemical disposal.

More research is needed to prove that solar systems can work economically, that complete systems can be developed, and that necessary regulatory safeguards can be provided. The result will be an effective option for destroying hazardous chemicals which pose an ever-increasing threat to our environment.

Senator FOWLER. I have some other sharing of hopefully good news. Senator Bennett Johnston, the Chairman of the Energy Committee, has agreed to cosponsor our alternative energy bill.

Mr. SKLAR. Oh, that's wonderful news.

Senator FOWLER. We are hoping that that will come out of the Energy Committee very shortly with commitments of the leadership to bring it to the floor.

Mr. SKLAR. Wonderful. That's great. You've made my day, Senator.

Senator FOWLER. Well, just keep working.

Mr. SKLAR. We are.

Senator FOWLER. I thank everybody again, especially the afternoon witnesses for waiting and being so patient and understanding of the strange way we do business.

We stay extraordinarily busy, I say to my friend from Massachusetts, but that is not to be confused with progress, unlike your business.

But you've all been a big help.

ADDITIONAL STATEMENT SUBMITTED FOR THE RECORD

[Clerk's Note.—The following statement was submitted by Matthew Scott subsequent to the hearing and will be printed in the record at this point.]

STATEMENT OF MATTHEW SCOTT, PRESIDENT, NORTH AMERICAN LAKE MANAGEMENT SOCIETY

Mr. Chairman and Members of the Subcommittee:

My name is Matthew Scott, and I am President of the North American Lake Management Society (NALMS), a national organization made up of citizens, scientists, lake associations, and water pollution control professionals who are concerned about the poor water quality in our Nation's lakes and reservoirs. I am also Director of the State of Maine's Low Level Radioactive Waste Authority. Prior to becoming the authority's director in 1988, I was Director of Maine's Environmental Management Division for 17 years. In that position, I developed and managed the State's lake protection and improvement programs.

Introduction

We are pleased that this subcommittee has offered us this time to testify. It is a privilege that you have generously extended to NALMS over the past eight years. This year, we wish, once again, to seek your support for full funding of both EPA's Clean Lakes Program authorized under section 314 of the Water Quality Act and the nonpoint pollution control demonstration program authorized under section 319. Full support of these programs is crucial to reversing the chronic degradation of our Nation's lakes and reservoirs. Without that support, we will lose the momentum regained from the infusion of funds in the Clean Lakes Program from last year's appropriations. Lack of support will guarantee the steady decline in the health and eventual loss of our vital lake resources. These resources represent billions of dollars in their tangible worth for recreation, fishing, and water supply alone.

Status of the Resource

We have reported to you before on recent national water quality data that reveal a desperate situation with regard to the status of the Nation's lakes and reservoirs. It is important that we keep that information before us as we evaluate water pollution control needs and target limited resources to maximum public benefit. Recall that the 1984 report on America's Clean Water by the Association of State and Interstate Water Pollution Control Administrators indicated that four times more lake water (1.6 million acres) was reported to have degraded in quality than had improved in quality (0.4 million acres) over the decade 1972 to 1982. ASIWPCA's 1985 report on the status of nonpoint pollution indicated over 8 million acres of lakes (over half of all assessed lakes) to be impaired or threatened by nonpoint source pollution. For the entire Midwest, 80 percent of assessed lakes are impaired.

Data included in the States' 1988 305(b) reports continue to indicate that we are not making progress in protecting and restoring our Nation's lakes. When we further recognize that we are monitoring less than half of the lake surface acreage in the country, and that inadequately, we continue to believe the water quality problems are getting worse, not better.

Of the 12,157,539 lake acres assessed by the States, 23 percent were found to be impaired or partially impaired, and 22 percent threatened by pollution. Approximately half of the 22,000 lakes classified by trophic status were either eutrophic or hypereutrophic. According to the States, 76 percent of the pollution affecting lakes originates from nonpoint sources, 11 percent from point sources, 12 percent from natural sources. Agricultural nonpoint source runoff was the most frequently reported source. Maryland reports over 7,000 acres of lakes either threatened or impaired, while Michigan shows greater than 56 percent of the 500,000 acres reported to be threatened or impaired.

The 1988 data also underscore the growing concern for contamination of lakes and reservoirs by metals and toxic chemicals. Reported metals contamination includes selenium, iron, manganese, and mercury. For example, selenium has caused a drastic decline in fish population and reproduction in two North Carolina lakes (Belew and Hyco). Minnesota reports that mercury contamination has become a problem in its northeastern lakes. Minnesota indicates that, at this time, 1 percent of the lakes greater than 5,000 acres contain fish that cannot be consumed. Of lakes with less than 5,000 acres, some fish can be consumed from only 80 percent.

Nineteen of the 25 reporting States indicate that they are measuring impaired uses in their lakes from metals, inorganics, priority organics, and pesticides. Kansas reported that all of its impaired lake acreage is from this type of pollution. Detectable concentrations of agricultural pesticides (e.g., atrazine and alachlor) were found in 34 percent of the 128 lakes sampled for pesticides. Fifty-seven percent of the lake acres exceeded the National Academy of Sciences guidelines for protection of predators, with chlordane, PCBs, dieldrin, and heptachlor the principal causes. Kentucky indicates this is 67 percent of its problem, and North Carolina, 53 percent. Of the lake acres monitored for toxicants in New York, approximately 20 percent were affected to some degree by PCBs or pesticides, with fish advisories in effect for several lakes. On December 14, 1988, the State of Michigan issued a 1989 fish consumption advisory for all of its inland lakes. It was issued because in three of four lakes tested, some fish have mercury exceeding Michigan Department of Health consumption levels.

Recommendations

Although the general health of the national lake resource appears to be in decline, I want to quickly say it could have been worse. Much worse. We have done a lot over the past 14 years since the first appropriation for the Clean Lakes Program in 1975, and that is largely a result of the independent action of this subcommittee and its continued favorable response to the general public's request for your support. Since 1975, the executive branch has asked for appropriations for section 314 only three times, I believe. Yet, you have appropriated about $110 million over this period to sustain a national program effort. That's about a tenth of the authorized level. I want to take a few minutes here to say why that was and remains so important.

First of all, it indicated to the public that you heard them and you were interested in this issue. The initial resources were used mostly for in-lake restorative procedures that showed the general public that lakes could be returned to good health if the in-lake problems were ameliorated. Since that time, EPA has awarded about 200 restoration projects, with all but one or two States participating. Nearly 87 percent of the funding goes to on-the-ground improvement measures. Additionally, EPA has assisted most States with small grants to assess the quality of their lakes and establish priorities for pollution abatement and restoration.

Restoration of the lakes provided a return of lost benefits, primarily to boating, swimming, and fishing. This was and continues to be especially true for the blighted, impoverished inner-city areas. It improved the quality of resources within lake districts, enhancing property values, increasing tax revenues, and improving business opportunities for communities. The first grants showed the cost/benefit of the program at about eight-to-one.

The demonstration grants provided the technical information so desperately needed to better understand lake processes, to refine pollution abatement and restoration approaches, and to improve assessment methods. With that information it encouraged the public to start developing the institutional infrastructure at the local and State levels to address the growing problems with their lakes. For instance, numerous State programs with regulatory and cost-sharing features, such as in Massachusetts and Ohio, have been established and implemented to complement the national program. And most importantly, the national program provided the support necessary for establishing independent clearinghouses of information, such as the North American Lake Management Society and numerous State and local lake associations, so crucial to ensuring that the most comprehensive information is developed and made available to everyone for the best management of our lake resources.

So what remains to be done? How much Federal support is needed now and where must it be applied? We have made progress and we have done it with minimal resources. But so much more must be done if we are to retard and hopefully reverse the trend in the degradation of our Nation's lakes.

■ **Section 314 needs full support.** As we indicated last year, continuing to fund the Clean Lakes Program constantly at a minimum of $15 million per year will go a long way to assuring that most States at the end of that time will have an institutional infrastructure adequate to address lake quality issues effectively and comprehensively. We would envision this to mean that State water quality agencies would have sufficient legislative authority and resources to address lake water quality issues, including the development of water quality standards that protect lakes specifically. A 1988 NALMS survey of State water agency officials indicates they do not have adequate lake standards and would like EPA assistance. Included in this authority and resource base would be the capability to assist counties, cities, and watershed districts in designing and implementing programs to assure that water quality standards are maintained. To do this, most States still need the information derived from the grants awarded under section 314 to assist them in lake water quality assessment, watershed assessment, and implementation of restorative procedures. Therefore, we strongly recommend that $15 million be appropriated by this subcommittee for section 314 in fiscal year 1990.

■ **Section 319 needs full support.** This section of the Water Quality Act of 1987 was promulgated because the Congress recognized that we must control fishable/swimmable waters. Today, the most recent State water quality data in 1988 305(b) reports indicate that as much as 85 percent of the remaining water quality impairment results from nonpoint sources. Most States have prepared their nonpoint source assessment required by section 319 along with their management plans and submitted them to EPA. It appears that the majority of the States will be in a position to start implementing a part of, if not all of, these plans in fiscal year 1990. If the Congress does not assist the States with full appropriations under section 319 to implement demonstrations, most importantly the development of the cooperative infrastructure and monitoring and assessment components, the States will have little chance to produce any information by the reporting date to Congress in 1991 on the merits or weaknesses of their management programs. Without this support, the State water quality agencies will be left out of the implementation equation already set in motion in the agricultural area. This could likely mean that, without adequate support from the water quality agencies. the agricultural community will find itself supporting programs and practices that are not achieving to the greatest extent the necessary water quality objectives, namely, the achievement of water quality standards.

Lack of progress in the area of nonpoint source controls will likely be a heated issue in the reauthorization of the Water Quality Act in 1991. Continued lack of support for implementing the demonstration grants under section 319 puts the States and Congress in a difficult position to defuse the debate for a regulatory approach to this issue. We believe that full funding of this program for four years would go a long way to provide evidence that the problem can be adequately addressed without national regulations. And it would show that the problem can be solved within fiscal constraints imposed by current budget deficits. We strongly recommend that this committee support a $100 million appropriation for the 1990 fiscal year and we believe that funding should be diverted from the construction grants program for these purposes.

■ **Research and technology transfer authorized under section 104(h) of the Water Quality Act need support.** As indicated earlier, most State water quality administrators now believe that their water quality standards programs are not adequate to protect or restore the beneficial uses of lakes or prevent them from becoming further contaminated with toxic substances. They have asked that EPA assist them by developing better information on the physical, chemical, and biological properties peculiar to lakes that can be transferred and shaped to meet specific State needs. We strongly encourage this subcommittee to ask EPA to revitalize its lakes research program to provide the information required by the States, and to direct EPA to use $2 million of its research for this purpose.

■ **Water quality and assessment grants appropriated under section 106 of the Water Quality Act should be increased** for the specific purpose of improving the capability of the States to assess the biological integrity and status of their water resources. Most states are ill-equipped technically and financially to revamp and expand their monitoring and assessment capability. It will take improved monitoring methods, including biological, remote sensing, and telemetry components. Over the years, this program has become a catch-all grant that States are forced to use to handle all of the conflicting priorities imposed on them by EPA. This year, the grant is being expanded to include their nonpoint source program, wellhead protection, wetlands enforcement, and other activities. The grant was not designed for this, and mixing them to make choices weakens all program efforts. We strongly encourage this subcommittee to instruct EPA to restrict the 106 grants for water program administration and water quality assessment and monitoring and to seek resources under appropriate authorities for other program purposes. We encourage this subcommittee to appropriate the maximum ($75 million) authorized for section 106.

Summary of Recommended Actions

Lakes are important to the public. Ninety-nine percent of the population lives within 50 miles of a publicly owned lake. Greater than 50 percent live within 5 miles. We use them for so many reasons, the least of which is recreation and general enjoyment. Lakes serve a vital role in the ecological functions performed. They offer crucial habitat for numerous species of fish and wildlife, many of which are endangered. They represent economic assets for community stimulation and growth. Yet, we are continuing to lose them at an unacceptable rate.

We have made significant progress in understanding lake and watershed processes. Institutional infrastructures have been started at the State and local levels that, when completed, will go a long way to reverse the downward trend in the quality of this resource. But to achieve that objective, we need your commitment to fully fund the Clean Lakes Program (section 314) and Nonpoint Source Demonstration Program (section 319(h) in fiscal year 1990 and for the next three to four fiscal years.

Understanding that the Construction Grants program is on schedule to be phased into a self-supporting Revolving Loan Fund operated by the States and that appropriations will be significantly less for this program in fiscal year 1990, we strongly encourage the subcommittee to divert a small fraction of budget authority for full appropriations to the Nonpoint Source Demonstration and the Clean Lakes Programs. We believe this is appropriate since nonpoint source pollution represents as much as 85 percent of the residual water quality pollution problem in the country. Such a decision will accelerate the opportunity to achieve Clean Water Act goals, stem the onslaught of nonpoint source pollution to the Nation's waters, and reverse the degradation of our lakes and reservoirs. All of this would be achieved while addressing the large budget deficits facing us.

Thank you for the opportunity to comment. I look forward to answering any questions you may have.

SUBCOMMITTEE RECESS

Senator FOWLER. We are going to stand in recess until 10 o'clock tomorrow morning when we will again have testimony from public witnesses and Senator Robert Kerrey of Nebraska will Chair.

[Whereupon, at 3:40 p.m., Thursday, May 18, the subcommittee was recessed, to reconvene at 10 a.m., Friday, May 19.]

VA, HUD, AND INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1990

FRIDAY, MAY 19, 1989

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:10 a.m., in room SD–116, Dirksen Senate Office Building, Hon. J. Robert Kerrey presiding.

Present: Senator Kerrey.

NONDEPARTMENTAL WITNESSES

SUBCOMMITTEE PROCEDURES

Senator KERREY. The subcommittee will come to order. Today, we will hear from public witnesses regarding the proposed budget request for the National Science Foundation, the Department of Veterans Affairs, the National Aeronautics and Space Administration, the Environmental Protection Agency, the Federal Emergency Management Agency, and the Consumer Product Safety Commission.

I'd like to go over briefly the procedures for this morning's hearings. Because of the number of witnesses, we are asking that you keep your presentation to 3 minutes. We'll be using these lights so you will notice when your time is almost up.

When the yellow light goes on, you have 1 minute remaining; and when the red light goes on, your time is up. I'll call you in panels of five or six witnesses.

PANEL NO. 1

Panel No. 1 is Dr. Ronald Roskens, Association of American Universities; Mr. Fred Humphries, American Association of State Colleges and Universities; Mr. George Drake, National Association of Independent Colleges and Universities; Dr. John Crowley, Coalition for National Science Funding; Dr. Robert Parilla of Montgomery College; and Father Williams George and Father T. Byron Collins of Georgetown University.

Our first panel of witnesses will be Dr. Roskens, Mr. Humphries, Mr. Drake, Dr. Crowley, Dr. Parilla, and Father William George.

Gentlemen, you're at the witness table. If you'll proceed, we'll hear first from Dr. Roskens, president of the University of Nebraska.

We welcome you here today. You may proceed.

NATIONAL SCIENCE FOUNDATION

STATEMENT OF DR. RONALD W. ROSKENS, ASSOCIATION OF AMERICAN UNIVERSITIES, ET AL

Dr. ROSKENS. Thank you very much, Mr. Chairman.

My name is, as you say, Ronald Roskens, president of the University of Nebraska. It's a great pleasure for me to appear today to discuss the National Science Foundation's 1990 budget request; a double pleasure because you, one of our most distinguished citizens, are presiding today.

It gives me a sense of comfort. I'm appearing, as you indicated, on behalf of four major higher education associations which I think together would represent virtually all of the Nation's research universities that are engaged in NSF and other federally sponsored programs.

The NSF budget request focuses primarily on two areas: Research programs and human resources. I don't think there are very many people in this country who would dispute the strength of American science. There are lots of studies, many of which indicate that investment in basic sciences pays society a very high return, particularly in terms of dramatically increased productivity, and research and skilled practitioners and essential to our ability to compete in the global marketplace.

RESULTS OF NSF INVESTMENTS AT UNIVERSITY OF NEBRASKA

At the University of Nebraska, for example, investments by the NSF in the Balin Laboratory of Physics have made possible some very groundbreaking achievements in superconductivity. And the NSF supported Mid-West Center for Mass Spectronometry in our chemistry department. It's doing state-of-the-art analysis in water contamination studies that are so critical to the environmental protection with which I know you're very concerned.

The effects of that kind of contamination are being studied at our medical center. The fiscal year 1990 request also includes increased funding for much needed activities to improve the quality of education at all levels.

Targeted at NSF initiatives in science and math obviously are essential to the national effort to strengthen our elementary and secondary schools, the University of Nebraska has instituted programs with NSF support to enhance elementary teachers' skills in mathematics and science instruction and to offer programs on weekends for fifth and sixth graders in these subjects.

I'd like to just digress a moment to indicate that, although it's not likely to be an issue for the fiscal year 1990 appropriations, I do want to note for the record—and I do this with appreciation—that you, Senator, recently cosponsored legislation to establish scholarship programs to encourage talented undergraduates to pursue careers in science and engineering.

I realize that the details of that remain to be worked out, but the general concept of merit scholarships to encourage careers in science and engineering, that is something that we think is very worthy. I'd just like to say that I and the association that I represent think that you have done something very worthwhile here and we want to thank you for that.

We would be very happy to participate in any consultations that might be helpful in that regard at any later point, as you see fit.

Then, with respect to NSF funds for the graduate fellowship program, that obviously will help universities deal with the very difficult problem of recruitment and training scientists and engineers.

FACILITIES

Finally, I'd like to just say a quick word about facilities. Funding for construction and management of the university laboratories has been inadequate for years.

At Nebraska, for example, our efforts in engineering and the sciences have been hampered by a lack of space and by outdated equipment. It's just difficult to imagine providing new and useful space without some assistance from the Federal Government; although the Congress authorized facilities modernization program recently, no funds have been requested to fund the facilities program, at the expense of ongoing research and education activities. It could damage important Foundation programs.

So we're looking for answers to the facilities problems and we have begun to have discussions with Director Bloch and other officials. We really want to look forward to addressing that issue in the fiscal year 1991 budget request.

Thank you.

Senator KERREY. Should we have one of these at home? [Laughter.]

Dr. ROSKENS. If we could make one of those available to me, it would be a great asset.

Senator KERREY. The only comment I would make, Dr. Roskens, I think your decision to defer on these facilities requests is a wise one, given the competition for funds and the difficulty of getting funds.

I think most people in the Congress would be far more interested in funding things related to human activities as opposed to construction of facilities.

I know that's going to put additional pressure upon the State budgets. And we're very much aware of the problem that that creates, in response to it.

But, I think you're wise, nonetheless, to defer the facilities.

[The statement follows:]

STATEMENT OF DR. RONALD W. ROSKENS

ON BEHALF OF

ASSOCIATION OF AMERICAN UNIVERSITIES

ASSOCIATION OF GRADUATE SCHOOLS

COUNCIL OF GRADUATE SCHOOLS IN THE UNITED STATES

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES

Mr. Chairman, Members of the Subcommittee:

Introduction and Summary

My name is Ronald Roskens, and I am President of the University of Nebraska. It is a pleasure to appear before you today to discuss the FY 1990 budget request of the National Science Foundation (NSF). My testimony is presented on behalf of four leading higher education associations which together represent virtually all of the nation's research universities engaged in NSF and other federally sponsored programs. We urge the Subcommittee's support for the full FY 1990 budget request of the National Science Foundation.

I will briefly explain this recommendation by discussing three topics:

- Research programs
- Human resources
- Academic research facilities

Research Programs

The proposed FY 1990 budget for the Foundation's research programs is an excellent one. It recognizes the nation's need, especially in these times of fiscal constraint and economic challenge, to sustain our commitment to invest in the education of well trained scientists and engineers and in the discovery of new knowledge. Last year Congress authorized the Administration's request to double investment in the Foundation's programs by FY 1993. The FY 1990 budget, although below the authorized level, is generally consistent with that goal. It also sustains balance among modes of support, especially between the individual investigator grant, as the backbone of the scientific enterprise, and promising new interdisciplinary research centers.

Few dispute the strength of American science. For almost fifty years we have successfully linked conduct of the nation's basic research activities with graduate preparation of the next generation of scientists and engineers in our universities. This investment produces two of our most essential national resources: new knowledge and highly trained people. The decision to join research with graduate education has made our university enterprise the largest, most vital, and most productive in the world.

If the budget is approved, NSF estimates that over 19,000 graduate students and over 4,000 postdoctoral students will be engaged as research assistants and investigators on NSF research projects.

Investment in research and graduate education pays the taxpayers a superb rate of return on their investment. Recent research by Dr. Edwin Mansfield of the University of Pennsylvania shows that our society receives an annual return on its investment in basic science of 28 percent. The Department of Labor estimates that technological innovation, which flows from fundamental research and, frequently, from the insights and inspiration of well trained scientists and engineers, accounts for 44 to 77 percent of our increased productivity. Research and skilled practitioners to utilize it are essential to our ability to compete in the global marketplace. It is no exaggeration to say that our future national security, both military and economic, will depend at least as much on the depth and quality of our research and education programs as on our military strength..

Let me cite a few examples of the important role NSF plays at University of Nebraska. Far-sighted investments by NSF in the area of atomic and molecular physics have made possible the achievement of international prominence by the Behlen Laboratory of Physics at the University of Nebraska, Lincoln, with its staff of seven world-renowned physicists. Groundbreaking achievements in superconductivity have also been made there.

Similarly, the NSF-supported Midwest Center for Mall Spectrometry in our Chemistry Department is providing state of the art analysis for water contamination studies critical to environmental protection. NSF investments are vital to significant research at our University of Nebraska Medical Center in studies on the relation of groundwater contamination to renal and hepatic function, and at our highly regarded Eppley Cancer Institute at the Medical Center in research of prevention of colon cancer.

Human Resources

The FY 1990 budget request of the Foundation includes $347 million, an increase of $62 million, for Foundation-wide education and human resources programs. The Foundation's educational activities address our needs to improve the quality of elementary and secondary schools, our undergraduate colleges, and our graduate programs, a subject of national concern. While primary responsibility for elementary and secondary education properly lies with local and state governments, carefully targeted NSF initiative in science and mathematics are essential contributions to the national effort to strengthen schools.

Undergraduate programs will receive $105 million, an increase of 63 percent over last year. NSF's programs to engage undergraduate students in organized research programs are especially important because they encourage talented students to pursue graduate education.

Funding the Graduate Fellowship program will provide impetus toward reaching its 1992 goal of doubling from about 600 the number of new awards to exceptional students. In FY 1990 the Foundation proposes to award 960 competitive fellowships, including 80 awards specifically designed to encourage women to purse careers in engineering. We simply must take the necessary steps to improve access to research careers by women, minorities, and the handicapped. As the following litany of facts illustrates, this complex problem is one of the most serious confronting our educational system and the nation.

- By the year 2020, experts estimate, 70 percent of our workforce will be comprised of minorities and women.
- In 1987 blacks received less than 1 percent of Ph.D. degrees awarded to U.S. citizens in the physical sciences and engineering.

- Women account for only about 6 percent of Ph.D. degrees awarded in engineering; the impressive gains by women in law, medicine, and business have not been matched in engineering.

- The U.S. is failing to retain sufficient numbers of our best students in graduate programs and, as a result, we are becoming increasingly dependent on foreign nationals. In 1970 nearly 85 percent of all doctorate recipients were U.S. citizens; now slightly more than 70 percent are American citizens. In the physical sciences, U.S. doctorate recipients dropped from 82 percent in 1970 to 62 percent in 1986; in engineering the drop was precipitous, from 73 percent to 41 percent.

- White male doctorate recipients also have dropped from 17,000 to 12,000.

- Dr. Richard Atkinson, Chancellor of the University of California at San Diego and former Director of the National Science Foundation, estimates a shortfall of 7,500 Ph.D.'s in science and engineering just a few years into the next century.

If we are to turn this situation around, a stronger national effort will be required. Universities, in partnership with NSF, other federal agencies, state and local government, and industry are taking steps to address the need to expand and strengthen the human resources pipeline. At the University of Nebraska the NSF will have provided over $800,000 in a four year period to upgrade the mathematics and science skills of secondary school teachers through stipends for university study. Other NSF supported activities are bringing fifth and six grade students to the campus for Saturday morning instruction in science and mathematics. Investments like these pay great dividends in the long run.

Academic Research Facilities

Moving to the subject of academic research facilities, for more than twenty years the Federal government has lacked an investment policy for the construction and modernization of academic laboratories in which federally sponsored research is conducted. Since 1968, when all organized federal academic research facilities programs were being terminated, federal investment in university laboratories has declined by about 95 percent. In 1963 Congress passed the Higher Education Facilities Act. At its peak that program provided about $600 million for the construction and modernization of academic facilities, including research facilities. If the commitment to that program had been sustained at that level, in real terms the Federal commitment to facilities would now be about $2 billion annually. As a result of the withdrawal of the federal contribution research institutions have fallen behind in their ability to provide suitable environments for modern research programs.

Previous studies found institutions able to meet only about half of their accumulated needs. In a report to Congress last fall, NSF found that 40 percent of university laboratories require repair and renovation, with the greatest needs in the agricultural, environmental, medical, and physical sciences. For every dollar universities now spend in new construction, they are deferring $2.50. For every dollar institutions spend on repair and renovation, they are deferring $3.60. If we were to fund just the research facilities deficit for 1988 and 1989, the cost would be about $3.6 billion. Another new report by the National Association of College and University Business Officers (NACUBO) and the Association of Physical Plant Administrators (APPA) states that the "urgent" facilities needs of the 104 leading research universities total $7.2 billion.

At the University of Nebraska the inflexibility of older buildings exerts a costly and restrictive burden on researchers and their equipment. Much new scientific equipment is large and generates a great deal of heat. Like many other universities, some of our efforts in physics, engineering, biotechnology, cancer research, and computer science are hampered by lack of space and lack of adequate air handling equipment for maintenance of proper environment for research equipment and those who work with it. Given our state's limited resources, it is difficult to visualize providing new and useful research space without federal help.

In 1986 the White House Science Council urged the immediate creation of a new program in NSF funded, as a "necessary minimum", at $500 million per year. Just two weeks ago, Dr. Frank Press, President of the National Academy of Sciences, called for the creation of a government-wide academic research facilities effort involving all science agencies and funded at $1.25 billion per year.

Last year Congress took the first step toward reformulating a sound national policy for academic research facilities by authorizing in NSF the Academic Research Facilities Modernization Program, a competitive, matching grant program. In FY 1990, $125 million is authorized for it. Unfortunately, no funds are requested. We greatly regret this omission. However, to fund the program in the absence of a budget request for it and at the expense of already constrained ongoing research and education programs would not be a productive response to the research facilities problem, and it could well damage important programs of the Foundation.

We are continuing to pursue answers to the facilities problem. Discussions have begun with Mr. Bloch and other NSF officials. We are optimistic that a sound comprehensive strategy for addressing the facilities problem can be devised for FY 1991 and beyond. We also will discuss the problem with the Assistant to the President for Science and Technology and other administration officials in the context of the FY 1991 budget at the earliest opportunity. We look forward to discussing the facilities problem with the Subcommittee in the context of the FY 1991 budget request for NSF and other agencies.

Thank you for the opportunity to appear before the Subcommittee. I will be pleased to respond to your questions.

STATEMENT OF FREDERICK S. HUMPHRIES, PRESIDENT, FLORIDA A&M

Senator KERREY. Mr. Humphries.

Mr. HUMPHRIES. Thank you, Mr. Chairman.

I am President Frederick S. Humphries of Florida A&M University, here today representing the American Association of State Colleges and Universities, the American Association of Community and Junior Colleges, the Association of Community College Trustees, and the National Association for Equal Opportunity in Higher Education.

The American Association of State Colleges and Universities is an organization that represents over 370 public colleges and universities across the Nation.

AASCU institutions educate 20 percent of the minorities and, in fact, we include the National Association for Equal Opportunity in Higher Education; in the community colleges, we probably have more than 800 minorities in those institutions.

We produce 50 percent of the teachers and grant more than one-third of the baccalaureate degrees awarded in the United States.

I want to point out, Mr. Chairman, that the status of science and engineering education in this country and the participation by the American citizens in science and engineering education has been termed as a national security risk.

If we don't solve the problem of greater participation by minorities and by the average student and high school coming into science and engineering education, we will, in fact, be a Nation terribly at risk.

It's a lot like not funding the national Defense Department's budget if we don't put more money into education in the National Science Foundation's budget.

The problem in science and engineering education is all along the pipeline from elementary and secondary to undergraduate education to graduate education.

It is a massive problem and one that deserves the attention of this Nation, a notion that we are at a crisis level of operation in terms of our participation and the making of baccalaureate scientists and engineers in this Nation.

If we look at the NSF recommended budget for fiscal year 1990, we see that there's only $190 million recommended for the science and engineering education section. It's an increase of $19 million.

That increase would go for $10 million to precollege programs, $2 million for undergraduate programs, and $7 million to graduate fellowships.

This Nation is very rich with scientific and engineering research, as has been noted by distinguished collegiates from the University of Nebraska.

But one has to question what are those dollars going to support when over 50 percent of the engineering Ph.D.'s in this country today are given to international students and not American citizens.

In the physical sciences, we're down now to 70 percent of the Ph.D.'s granted coming from American citizens and 30 percent from international students.

The pipeline must be addressed, and what we are recommending is that the education budget of the National Science Foundation should represent 33⅓ percent of the appropriation.

That means that, today, if that were the case, with a $1.8 billion budget, we would have $600 million for education instead of $190 million.

We would hope that the doubling of the National Science Foundation budget for the future going to about $3.5 billion, that that would be a recommendation that education be supported, one-third of that total dollar value coming to even $1 billion over the next period of time. An even $1 billion.

So, there needs to be an increased emphasis on the funding of education in the National Science Foundation.

Thank you very much.

Senator **KERREY**. I don't want to drag this thing out, but one of the things, it seems to me, that is important, at least it's important in my view, is trying to get my arms around the deteriorating quality of performance in American students coming out of our high schools in math and science, and technology in particular.

Are you addressing that as well in your recommendation for a reallocation inside of NSF? Do you include that?

INADEQUATE FUNDING FOR EDUCATION

Mr. HUMPHRIES. Yes; and what we're saying is that the inattention by the National Science Foundation to education—you can see the direct result of the funding for education. If you go back to the 1960's, the National Science Foundation had adequate funding for education. And in the disappearance of education from the National Science Foundation, you will see the erosion of the participation of students coming out of high school in science and engineering, the deterioration of the quality of the laboratory experience, the deterioration of the quality of the teachers prepared in science education.

So there is a direct correlation between the loss of educational dollars and the state of the teacher preparation pipeline of the number of people indicating an interest in science/engineering, the quality of instruction that was seen in that.

So, if we want to rectify these possibilities, then the other terrific area that's got to be paid attention to is the extreme underrepresentation of minorities in science and engineering.

With the white high school population dropping, you've got to replace those people with the minorities that are in America. There you only have about 2.5 percent of representation coming out participating in science and engineering.

MINORITY UNDERREPRESENTATION

There's a terrific problem there to be addressed and to be served. We don't get educational dollars. Like right now, the National Science Foundation is struggling to fund career access programs, which is an excellent program to focus on the recruitment and enhancement of minority participation in science and engineering.

It's struggling to have money for that. I mean, the appropriation is $3 million the first year and $2 million last year, and $2 million this year.

You've only got $2 million for undergraduate programs. That would be all taken up trying to do something for the Career Access Program. We need to have at least 16 to 17 minority career access programs all across the United States of America; if you're serious about addressing the issue of minority underrepresentation, there's got to be more emphasis given and more attention paid to increasing the dollars for science and education.

Now, we all hope, because research is very important for this Nation, we all hope that will not be at the expense of research education, but I think to address this Nation's problems in science and engineering so that the graduate schools and the people who will be conducting research in that laboratory will be dollars spent by the taxpayers of this Nation on American citizens, we'd better address the problem of the pipeline, the quality of teachers that we have out there and the kind of programs we have in the high school. And the ability of NSF to manage those programs in such a way that it is effectively addressing educational needs. It is going to require more dollars. It's going to require understanding. It's going to require cooperation between the research institutions and those institutions that specialize in undergraduate education.

We have got to work directly with the high schools of America and interact to develop great elementary school programs that are going to encourage people to go into science.

It's a critical problem for this Nation. If we don't do something about increasing the educational budget, we're going to leave it unattended.

All the dollars you're going to be putting into research are going to be going to fund students who are coming from outside of this country, because they will come out better trained than our students in this country.

Senator **Kerrey**. I'd like to talk to you at some other point at length about this. I have other questions I'm afraid to ask because we'll be here——

Mr. **Humphries**. I'm sorry.

Senator **Kerrey**. That's fine. You feel strongly about it, and should. But the question for me still remains unanswered. I hesitate to engage much further because we have other witnesses on it, but I'd love to personally talk to you about it further at some other time.

Mr. **Humphries**. Tell me who I should get an appointment with and I'll be happy to. [Laughter.]

[The statement follows:]

STATEMENT OF FRED HUMPHRIES

President
Florida A & M University

on behalf of the American Association of State Colleges and Universities

Summary of Recommendations

- increase funding for Science and Engineering Education Programs at the National Science Foundation to $600 million, which includes $300 million for pre-college programs, $200 million for undergraduate programs, and $100 million for fellowships and graduate programs.

- divide yearly appropriations equally between the Science and Engineering Education account and the Research and Related account to recognize the equal importance of each to the well-being of the country.

- keep the management and budget responsibilities for undergraduate programs in the Undergraduate Science, Engineering and Mathematics Education Divsion, in the Science and Engineering Education Directorate created to deal with undergraduate programs,

- if undergraduate programs remain the responsibility of the Research Directorates, give the programs a line item in their budget so that the funds intended for undergraduate programs will be used solely for that purpose.

- request funding for the Academic Research Facilities Modernization Program at the authorized FY 1990 level of $125 million.

Chairman Mikulski, members of the committee, I appreciate the opportunity to be with you this morning on behalf of the American Association of State Colleges and Universities, an organization that represents over 370 public colleges and universities across the nation. AASCU institutions educate 20% of the minorities, produce 50% of the teachers, and grant 1/3 of the bachelors degrees awarded in the United States.

Since my time is brief, I will be direct and to the point. However, I would like to include for the record several pages of facts and figures that support our concerns and testimony regarding the dismal state of science and engineering education in this country. These facts and figures were gathered from the over 300 reports on the subject that have been published by associations, universities, advisory groups, industry and Congress over the past few years.

As you know, the process by which we educate our students in mathematics, science and engineering is in urgent need of repair. Due to the fact that our educational system has not kept pace with the changing needs of our nation and the world, we have a science and engineering education crisis on our hands.

The problems stretch throughout the entire pipeline in the form of inadequate teacher preparation and inservice training, outdated curriculum and equipment, and insufficient attention to minoritiy involvement in the sciences. An attempt to address these problems is being made with a small level of funding through the programs in the Science and Engineering Education Directorate (SEE) at the National Science Foundation (NSF). SEE's current programs in teacher preparation and enhancement, materials development, instrumentation and laboratory improvement, and career access opportunities for women, minorities, and the disabled have a direct impact on the problems that we are experiencing in science and engineering education. The Administration has requested $190 million in FY 1990 for SEE. The $190 million is used to fund elementary, secondary, postsecondary and graduate education programs at NSF. The $190 million represents a $19 million increase over FY '89 funding. Of this amount - pre-college will receive $10 million, undergraduate programs $2 million, and fellowships and graduate programs $7 million. We applaud this increase but ask for additional funding to realistically address the deficiencies that exist in mathematics, science and engineering education. We recommend a funding level of $600 million for Science and Engineering Education, $300 million for pre-college, $200 million for undergraduate programs, and $100 million for fellowships and graduate education. We admit that these increased levels of funding are insufficient to solve all of the problems that exist, but they will produce significant, positive changes and - **We are in dire need of significant, positive changes.**

We believe that scientific research and science education are mutually supportive and dependent upon each other. The charter for the NSF recognizes this by including responsibilities for both research and education. Since establishment of the Foundation the distribution of expenditures between these two obligations has varied greatly. Immediately following Sputnik science education was a major portion of the NSF budget and in the early 1980's it nearly disappeared. AASCU believes that a more prudent policy could be built upon the principle that these two responsibilities are equally vital to the well-being of the country, and that the funds appropriated yearly should be equally divided between the SEE account and the Research and Related account (R&R).

In addition to the equal division of funds for education and research at NSF, we feel it is imperative that the management of and the funding for undergraduate programs remain under the SEE Directorate in the division that was created to deal with undergraduate programs, the Undergraduate Science, Engineering and Mathematics Education Division (USEME). It is argued that having undergraduate programs across the Research directorates provides the needed link between the two, keeping the one aware of the other's importance. However, when funding becomes tight a shift in priorities evolves. For example, in 1988 when proposals were accepted by NSF for the Instrumentation and Laboratory Improvement program (ILI) for Ph.D. granting institutions, a program that was to be funded at $9 million through the R&R account, the institutions were told that there was no money to support the program. Recently, one of our institutions went to visit an NSF program officer regarding the Research in Undergraduate Institutions Program (RUI). The RUI program supports research in academic settings where the primary emphasis is on undergraduate education and research involvement is used to prepare undergrads for graduate study and careers in science and engineering. This particular proposal had received high marks but was not accepted. The institution wanted to know what improvements needed to be made before the proposal was resubmitted. Our institution's representative was obviously disappointed when he heard the NSF program officer admit that he did not even know what the RUI program was, let alone how the proposals were reviewed and evaluated. We hope this is an exception and not the rule, but from the numerous comments we receive from our institutions, we fear it is the rule and not the exception. We ask that the management and budget responsibilities for undergraduate programs remain in the SEE Directorate within the USEME division where they will always be a priority. Another solution to this would be to require that the funds targeted in the R&R account for undergraduate programs be set aside by a line item in their budget. This would ensure that the funds are used solely for undergraduate programs. We agree wholeheartedly with a statement made by Professor Jerry Bell of Simmons College in his recent testimony before the House Subcommittee on Science, Research, and Technology: "Responsibility for the undergraduate programs distributed among the Research Directorates is diffuse and uneven; in some cases they seem not to be of high priority. The result for the total undergraduate effort is a disjointed array of claims for activity throughout NSF, which is confusing, even mysterious, to the national academic community."

We also want to take this opportunity to let the committee know that AASCU institutions strongly support the Academic Research Facilities Modernization Program, and ask that you fund the program at the authorized FY 1990 level. This program, authorized through Public Law 100-570, has set funding levels at $80 million for FY 1989, $125 million for FY 1990, $187.5 million for FY 1991, and $250 million for FY 1992 and FY 1993.

The recent study conducted by Coopers & Lybrand for the Association of Physical Plant Administrators of Colleges and Universities and the National Association of University Business Officers entitled **The Decaying American Campus: A Ticking Time Bomb** states that capital renewal and replacement needs of U.S. colleges and universities are estimated at $60 billion. Of those, priority repairs and renovations or "urgent needs" require an estimated $20.5 billion of the total $60 billion. Facility reinvestment has not kept up with the growing need. Last year colleges and universities deferred $4.00 of needed maintenance for every $1.00 spent. The most common construction and renovation priorities were found to be laboratories, classrooms and libraries, all essential elements to a quality education.

In closing, I would like to say that the future of this nation depends on how well we educate our youth. The priorities we set and what programs we develop and fund will have an impact on this generation and generations to come. We look to you for leadership in setting the priorities that will prepare our nation for the 21st century, and AASCU looks forward to working with you to meet the challenges that lie ahead.

Thank you.

SCIENCE AND ENGINEERING EDUCATION

"THE CRISIS"

Science Education:

- one half of American 17 year olds are not proficient with junior high school level mathematics problems and only 7% are ready for college science courses.

- by the year 2000 there will be 45,000 fewer students with mathematics and science B.A. degrees than we need to maintain our present economic status, by 2010, there will be 700,000 fewer workers with B.A. degrees than needed to fill existing jobs.

- today's science scores of the average 17 year old remain well below those of 17 year olds in 1969.

- for the first time in the history of the U.S. the current generation of students is less educated than the previous generation.

- by the end of 3rd grade nearly 50% of all students are not interested in taking additional science courses, and by the end of 8th grade only 21% have a positive attitude toward science.

- sciences have the highest attrition rates and the lowest recruitment rates of any undergraduate field.

- in the U.S. 1 in 4 students will drop out. Of the remaining 3 a high percent have been turned off to science before they enter high school and will take the minimum science requirements to graduate.

- of every 10,000 high school sophomores nationwide only 1800 indicate an interest in natural sciences and engineering as a career path. Only 850 will earn degrees in these fields, and 150 will go on to graduate school producing 110 masters degrees and 20 Ph.D.s.

- ten years ago 53% of high school science classes offered a lab experience; today it is 39%.

Manpower:

- traditional teacher education programs will supply less than half of the 60,000 mathematics and science teachers needed between now and 1992.

- a first year chemistry teacher will earn $7,000 dollars less than earned in an entry level position in industry.

- on the average, those who are attracted to education are often in the lower one third of their graduating classes in mathematics and science.

- U.S. will need 20,000 new mathematics and science teachers each year for the next decade.

- U.S. number of Ph.D.s in mathematics has declined by more than 40% in the past decade.

- currently 1400 engineering faculty positions are vacant.

- over the last two decades physical science and engineering Ph.D. recipients who stayed on to teach or do research has dropped by 20%.

- 1/3 of the present college faculty will retire in the 1990's.

- by the year 2000 the need for science and engineering faculty will grow to 4400.

- a National Science Teacher Association survey in the early 1980's found that as many as 50% of new high school science teachers lacked appropriate certification for the science courses they were teaching.

- 34% of elementary-level science teachers meet the minimum standards recommended by the National Science Teachers Association.

Minority Attainment:

- Blacks comprise 12% of the total population and 1% of the Ph.D.s in science and engineering, Hispanics comprise 9% of the total population and 1% of Ph.D.s in science and engineering; and American Indians comprise 0.6% of the total population and .16% of the Ph.D.s in science and engineering.

- the percentage of Blacks and Hispanics in the population is increasing but numbers entering colleges are decreasing.

- 35% of Black 18-19 year olds drop out of high school, 45% of Hispanic 18-19 year olds drop out of high school.

- over the last 15 years the total number of Blacks and Hispanics receiving Ph.D.s in math sciences averaged less than 10 per year.

International Competitiveness:

- 70% of foreign Ph.D. recipients remain in the U.S.; however this percentage will decline as other governments develop their countries science and technology capacity.

- foreign representation in the sciences is widening while U.S. representation is narrowing.

- percentage of foreign junior faculty in leading mathematics departments rose from 26.9% in 1977, to 36.3% in 1985, to 45.6% in 1986.

- percentage of mathematics foreign postdocs rose from 27.6% in 1977, to 39.7% in 1985, to 59.6% in 1986. This trend is more pronounced in engineering than mathematics and readily observable in physics.

- the top 5% of U.S. math students score below the average student in Japan and China.

Infrastructure:

- totals show that $14.4 billion was needed for urgent college and university facilities repair accumulated through 1987, and an additional $6.1 billion was needed in 1987-88.

- 39% of academic research facilities are in need of repair and renovation

- estimated cost of construction for research labs increased 30-35% from 1986 to 1989.

- facility needs: research institutions - $7.2 billion in urgent repairs; doctoral granting universities - $3 billion; comprehensive institutions - $5.4 billion; liberal arts institutions $1.9 billion; two-year colleges - $2.4 billion and specialized medical institutions - $462.2 million.

- on the average, campuses greater than 30 years of age had deferred maintenance costs 6% higher than campuses 30 years old or less.

** 80% of National Science Foundation Research dollars go to the top 50 research institutions. (top in terms of research dollars received)**

** year after year roughly half of the Federal support for basic research is awarded to the top 20 research universities (top in terms of research dollars received)**

STATEMENT OF GEORGE DRAKE, NATIONAL ASSOCIATION OF INDEPENDENT COLLEGES AND UNIVERSITIES, ET AL

Senator KERREY. We'll now hear from Mr. Drake, president of Grinnell College.

Mr. Drake is source of, the head of Grinnell College. [Laughter.]

Mr. DRAKE. It's a source of great confusion in the State of Iowa. I have to confess I'm an unwise person here and I represent independent colleges. I will take an unwise action, because as a representative of independent colleges and universities who receive no public funding for facilities, this is quite an important program for us.

I'm George Drake, president of Grinnell College in Grinnell, IA. I'm here today on behalf of Grinnell College as well as the more than 800 independent colleges and universities represented by the National Association of Independent Colleges and Universities.

SCIENCE FACILITIES IMPROVEMENT PROGRAM

The acronym is NAICU. We support an appropriation of at least $75 million for the implementation of the newly authorized Science Facilities Improvement Program to be administered by the National Science Foundation.

You might ask how we can afford to begin a new program of this sort under unprecedented budget pressures. A better question is: How can we afford to ignore the deteriorating state of science and engineering research facilities on our Nation's campuses?

This facility infrastructure is the bedrock underlying a successful academic research establishment and essential to the training of tomorrow's scientists and engineers. Yet, it is crumbling beneath us at an unprecedented rate.

The September 1988 National Science Foundation report on research facilities in colleges and universities indicated that the institutions are deferring $3.60 of repair and renovation needed for every $1 spent.

A study conducted by the association last year found $400 million was required for the repair and renovation of science facilities over the next 3 years. The problem is particularly acute for small private colleges like Grinnell, who do not have the State support and alumni base which gives State colleges and universities a fighting change.

However, it is precisely these smaller schools that have the most spectacular record of turning out future Ph.D.'s in science and engineering.

CONTRIBUTION OF SMALL COLLEGES

A quick look at the top 15 undergraduate sources of science and engineering Ph.D.'s in terms of productivity prove my point. Over one-half of the 15 are small, private, 4-year colleges, such as Grinnell, Reed, Swarthmore, and Oberland.

These schools are members of NAICU. Each produces at least one future science or engineering Ph.D. for every 10 graduates. They all need to upgrade their research facilities. Furthermore, these colleges are producers of American science Ph.D.'s, the point that President Humphries just made, who, as we all know, are a declining portion of graduate students and an increasing number of foreign nationals are enrolling in our science doctoral programs.

Up-to-date research facilities are important for the productivity of small colleges. A recent report by the Office of Technology Assessment put it this way:

> Experience in research as an undergraduate is one of the most effective means for luring students to a career in science. Without state-of-the-art facilities and equipment, it is impossible to provide potential scientists and engineers with the sort of positive experience that convinces them to pursue a Ph.D. despite the cost in time and money.

The recent emphasis on earmarking grants for construction of facilities at specific colleges and universities is symptomatic of pressure created by the lack of reliable generic facilities programs.

I suspect the changes are good that at least $75 million will be earmarked for specific facilities in various appropriation bills in fiscal year 1990.

Wouldn't it make more sense to provide a relatively modest $75 million to $125 million primarily for the repair and renovation of existing research facilities under the authority of the newly authorized Academic Research Facilities Modernization Act of 1988?

The project would be peer reviewed so there would be no talk of political favoritism and the funds would support work at a greater number of schools and the most productive of our independent 4-year colleges would have an opportunity to shore up a deteriorating facility infrastructure.

Clearly, the Congress recognized the need for independent facilities and construction program by passing the authorization last fall.

I hope this Congress will make that promise a reality by providing funds in this legislation.

Thank you very much.

Senator **Kerrey**. Thank you. I have an unwise followup for you.

DETERIORATING FACILITIES

What do you do if the money isn't appropriated? What sort of action is taken with the facilities that are deteriorating?

Mr. **Drake**. There are, I suppose, two possibilities: Defer the maintenance and hope for something in the future and make do with what you have; or you engage in a capital fund-raising campaign. That's where the independent universities and colleges traditionally raise those funds.

To the degree that you focus on capital projects and defer fund raising for ongoing programs, so, in a sense, facilities in a way compete with the programs that they support.

Our need for philanthropic dollars is great in all areas. More scholarships, more programs in more areas. They compete with each other since there's a finite pool of moneys to go out and raise in our constituencies.

Senator **Kerrey**. How do you cross the threshold to convince the taxpayers that we should be supporting at all other than through scholarships construction of facilities at a private school?

Mr. **Drake**. I think we just have to look at the productivity of the private schools and the fact that they are doing the job in the education of undergraduates in science, and that a significant proportion of those go on to get the Ph.D. degree and, hence, serve the public interest by becoming professional scientists.

A significant number come from the independent colleges, so I think there's no question that we serve a public function and meet public needs in turning out these graduates.

Therefore, we don't apologize for asking for some public help.

Senator **Kerrey**. Thank you.

[The statement follows:]

STATEMENT OF GEORGE A. DRAKE

Mr. Chairman, members of the Subcommittee:

I am George Drake, president of Grinnell College in Grinnell, Iowa. I am here today on behalf of Grinnell College, as well as the more than 800 independent colleges and universities represented by the National Association of Independent Colleges and Universities (NAICU), to support an appropriation of at least $75 million for the implementation of a newly authorized science facilities improvement program to be administered by the National Science Foundation.

You might well ask: How can we afford to begin a new program of this sort at a time of unprecedented budget pressures? A more pressing question is: How can we afford to ignore the deteriorating state of science and engineering research facilities on our nation's campuses?

This facility infrastructure is the bedrock underlying a successful academic research establishment. It is essential to the education and training of tomorrow's scientists and engineers, yet it is crumbling beneath us at an unprecedented rate. A September, 1988, National Science Foundation report on research facilities at colleges and universities indicated that institutions are deferring $3.60 of repair and renovation needed for every dollar spent. A study conducted by our Association last year found that $400 million was required for the repair and renovation of science facilities over the next three years in the independent sector.

The problem is particularly acute for small private colleges like Grinnell that do not have the state support or large alumni base that gives public institutions and the so-called research universities a fighting change. However, it is precisely these smaller schools that have the most spectacular record of turning out future Ph.D.s in science and engineering. A quick look at the top fifteen undergraduate sources of science and engineering Ph.D.s in terms of productivity proves my point. Over half of the fifteen are small, private, four-year colleges such as Grinnell, Reed, Swarthmore, Carleton, and Oberlin. These schools are members of NAICU, each produces at least one future science or engineering Ph.D. for every ten graduates, and they all need to upgrade their research facilities. Furthermore, these colleges are producers of American science Ph.D. students who, as we all know, are a declining proportion of graduate students, since an increasing number of foreign nationals are enrolling in our science doctoral programs.

Why are up-to-date research facilities important to the productivity of these small colleges and dozens like them? A recent report by the Office of Technology Assessment put it this way: "Experiencing research as an undergraduate is one of the most effective means of luring students to a career in science." Without state-of-the-art facilities and equipment, it is impossible to provide potential scientists and engineers with the sort of positive experience that convinces them to pursue a Ph.D. degree, despite the cost in time and money.

The recent emphasis on earmarking grants for the construction of facilities at specific colleges and universities is symptomatic of the pressures created by the lack of reliable generic facilities program. I suspect the chances are good that at least $75 million will be earmarked for specific facilities in various appropriations bills in fiscal year 1990. Wouldn't it make more sense to provide a relatively modest $75 million to $125 million primarily for the repair and renovation of existing research facilities under the authority of the newly authorized Academic Research Facilities Modernization Act of 1988? The projects would be peer-reviewed so there would be no talk of political favoritism, the funds would support work at a greater number of schools, and the most productive of our independent four-year colleges would have an opportunity to shore up a deteriorating facility infrastructure.

Clearly the Congress recognized the need for a facilities improvement program by passing the authorization last Fall. I hope this subcommittee and the Congress will make the promise a reality by providing funds to implement the legislation.

Leading 40 Undergraduate Sources of Science/Engineering Ph.D.'s for 6 Selected Yers (Adjusted for Institutional Size)

Rank	B.A. to Ph.D. rank	Institution	Total # S/E Ph.D.'s	Productivity ratio	Type
1	32	Cal Institute of Technology	388	44.34	Private
2	207	Harvey Mudd College/CA	68	30.63	Private
3	2	Mass Institute of Technology	1,114	21.28	Private
4	104	Reed College/OR	172	20.67	Private
5	78	Swarthmore College/PA	228	17.14	Private
6	146	Cooper Union/NY	126	13.71	Private
7	23	Chicago, Univ of/IL	497	13.48	Private
8	154	Radcliffe College/MA	97	13.43	Private
9	51	Rice University/TX	288	11.98	Private
10	179	Haverford College/PA	86	11.73	Private
11	453	New Coll-South FL U	30	11.63	Private
12	111	Carleton College/MN	161	10.95	Private
13	108	Pomona College/CA	161	10.16	Private
14	159	Grinnell College/IA	119	9.87	Private
15	50	Oberlin College/OH	292	9.72	Private
16	131	Antioch College/OH	156	9.41	Private
17	112	Calif, U-San Diego	127	9.37	Public
18	5	Cornell Univ/NY	981	9.27	Private
19	389	N Mex I Mining & Tech	33	9.17	Public
20	28	Princeton Univ/NJ	410	9.02	Private
21	222	Wabash College/IN	73	8.89	Private
22	140	Wesleyan Univ/CT	133	8.88	Private
23	127	Amherst College/MA	143	8.60	Private
24	208	Earlham College/IN	72	8.53	Private
25	578	Hampshire Coll/MA	20	8.37	Private
26	1	Calif, U-Berkeley	1,472	8.31	Public
27	27	Rensselaer Poly I/NY	368	8.24	Private
28	92	Polytechnic Univ/NY	210	8.10	Private
29	212	Bryn Mawr Coll/PA	75	7.90	Private
30	106	Brandeis Univ/MA	148	7.88	Private
30	56	John Hopkins U/MD	276	7.88	Private
32	89	Calif, U-Riverside	189	7.86	Public
33	10	Harvard Univ/MA	730	7.54	Private
34	138	Franklin & Marshall C/PA	134	7.19	Private
35	628	St Johns College/MD	18	7.17	Private
36	148	Wooster, Coll of/OH	119	7.03	Private
37	202	Kalamazoo College/MI	65	7.00	Private
38	24	Yale University/CT	470	6.88	Private
39	49	Carnegie-Mellon U/PA	277	6.83	Private
40	158	Calif, U-Santa Cruz	110	6.67	Public

Source: Office of Technology Assessment, Higher Education for Science and Engineering (March 1989) p. 253.

STATEMENT OF DR. JOHN C. CROWLEY, COALITION FOR NATIONAL SCIENCE FUNDING

Senator **Kerrey**. The next witness is Dr. Crowley.

Dr. **Crowley**. Thank you, Mr. Chairman.

My name is John Crowley. I'm here on behalf of the Coalition for National Science Funding. Thank you for providing us an opportunity to talk to you about the coalition.

I'd like to begin with a brief story if you will permit me.

About 12 years ago, a colleague of mine and I thought we ought to do a better job raising support or expressing support for NSF.

We called two major national investment groups here in Washington and asked for their help. We were surprised when both said they lack any policy direction from their own members with regard to NSF other than to cut its budget.

So we quickly ended the conversation, thanked them, and went on about our business.

The Coalition for National Science Funding is now a coalition of more than 80 national organizations. And as members of the national scientific and engineering and professional societies, higher education associations, independent research institutes, industrial corporations' appropriations, and other organizations.

In addition to higher educations, the institutions you will find on the membership list: The Industrial Research Institute, the Council for Competitiveness, the Council on Research and Technology, the Council for Chemical Research, the Industrial Biotechnology Association, and many others.

The support for NSF is much broader and deeper and includes industry.

ROLE OF NSF IN BASIC RESEARCH

Today, the National Science Foundation is important and I think that they see NSF as a recognition of the fact that among Federal agencies, only NSF has the mission of investing in basic research.

It accounts for only 2.6 percent of the Federal budget for R&D, 14.7 percent of a total Federal investment in basic research.

NSF accounts for more than one-half of the total Federal investment in physical sciences and engineering, and plays a disproportionate role in a vital field.

In education, as has already been mentioned, NSF plays a key leadership role.

I've been listening to the testimony this morning and I counted the chairs on the other side of the table, on the side of the table at which you sit, Mr. Chairman.

I think it's sobering to realize that of the 12 chairs arrayed on the other side of the table, we could assemble this morning all of the black citizens of the United States who have earned Ph.D. degrees in engineering in 1987—12.

If we were to add the chairs on this side of the table plus the chairs on each end, we could sit all of those who earned Ph.D.'s in physical sciences in 1987—16.

We're simply failing to attract a sufficient number of our citizens into graduate programs in science and engineering, including white men and women.

In 30 years, our work force will be predominantly minorities and women—70 percent minorities and women. Yet, minorities and women now account for very small fractions of our Ph.D. production; 16 percent in physical sciences, 15 percent in mathematics, 7 percent in engineering.

We, too, support the NSF support for facilities. We look forward to a request for that program from the National Science Foundation. We fully support it as a first step toward a comprehensive Federal strategy for research facilities. It's time that first step be taken.

We hope the Congress will respond favorably when the administration sends out that budget request for it.

Thank you for your time.

Senator KERREY. About 2 weeks ago now, Secretary Cavazos issued a report card on American education. Among other things, he observed that we spend an increased amount of expenditures, somewhere around $2,100 per student, on primary and secondary education.

He observed that the performance did not seem to improve. Explicitly stated as far as the Feds are concerned, with the implied statement. Explicitly stated as far as the Feds are concerned that: More money isn't the answer.

Do you agree with that?

KEY LEADERSHIP ROLE FOR GOVERNMENT

Dr. CROWLEY. It has to be a part of the answer, Mr. Chairman. We have to do a better job of investing in our educational system. The coalitions which we are working on emphasize the need to do a better job at the undergraduate level and at the graduate level.

The Federal Government plays a key leadership role at every level of the system. It has a key leadership role at the K through 12 level.

The National Science Foundation plays an important part. The National Science Foundation can play and has played a key part in the undergraduate level. It has a leadership role and a decisive role at the graduate level.

The Federal Government is the primary source of investment in graduate studies, both in science and engineering and in the behavioral sciences and social sciences as well.

So we need Federal leadership in addition to the response we need from the State government and the local government and private industry.

Senator KERREY. Do you find yourself feeling the same sort of urgency that I've heard from the other three witnesses, that there needs to be a Federal call for action?

Dr. CROWLEY. Absolutely.

Senator KERREY. I do, as well. But, I do find myself, in addition to that, confronted not just by this array of witnesses, but by the others who follow and the others who preceded that.

LEADERSHIP LACKING

This comprehensiveness that you describe and this coherence seem to be lacking. I hear in Secretary Cavazos' statement, though

I find him to be an awfully pleasant person, a reinforcement of the belief in America today that more money will do no good at all.

There is a fair number of people out there who would have reached that conclusion for a variety of reasons, that the expenditures of more money on education today won't make the situation any better at all.

How do you respond to that? When you have our No. 1 leader in education reaching that conclusion?

Ending, as George Will said yesterday in the Washington Post: Less on increase for overall education that Michael Milken earned in 1987.

How do you respond to that kind of action on the part of our No. 1 advocate?

Dr. CROWLEY. I think it is true that we as a people have excellent teachers in our schools. I think our very bright teachers and competent teachers can compensate for inadequate facilities, but only up to a point. The system has been doing that for a long time. Certainly, we do that in the area of research, instrumentation, and facilities. People are compensating for inadequate tools with their own ingenuity and their own sweat equity in a sense.

But, it reaches a point in a research program, in an education program, where you can no longer compensate for inadequate tools and inadequate environment with ingenuity. You have to address the fact that you're working in your instructional programs and your research programs without these tools. You have to address the need to modernize your tools.

Senator KERREY. I want to move on here. I'm taking too much time.

[The statement follows:]

STATEMENT OF DR. JOHN C. CROWLEY

ON BEHALF OF

THE COALITION FOR NATIONAL SCIENCE FUNDING

Mr. Chairman, Members of the Subcommittee:

Introduction and Summary

My name is John Crowley, and I am Vice President of the Association of American Universities. Thank you for this opportunity to present to you the views of the Coalition for National Science Funding on the FY 1990 budget request of the National Science Foundation. In summary, CNSF urges Congress to sustain the authorized doubling of the research and education programs of the National Science Foundation and to fund the facilities modernization program at the authorized level.

Coalition for National Science Funding

I am pleased to appear on behalf of CNSF. The Coalition is an effort by participating organizations to come together to speak more effectively on the importance of sustained investment in the research and education programs of the National Science Foundation.

Let me tell you a brief personal story that illustrates the positive change CNSF represents. About twelve years ago a colleague and I were working to broaden support for the National Science Foundation. Thinking that our friends in industry would share our concern, I contacted two national industrial organizations and asked for their help. You can imagine my surprise when I was quickly told by both of them that they lacked any policy direction from their members concerning NSF. In fact, their position on federal funding issues would have required them to support the attempts to cut the NSF budget which then concerned us! Of course, I quickly thanked them and did not pursue the matter further. Frankly, cooperation among national science and engineering organizations and higher education associations was weaker then, too.

CNSF is in its second year. Already it is a broadly based coalition of more than 80 national scientific, engineering, and professional societies, higher education associations, independent research institutes, industrial corporations, and other organizations. Member organizations include those higher education associations and professional science and engineering societies you might expect to find in any group that supports the National Science Foundation. However, CNSF participation is broader than that. Participants include several leading industrial organizations, including the Industrial Research Institute, the Council on Competitiveness, the Council on Research and Technology, the Council for Chemical Research, Inc., and the Industrial Biotechnology Association, plus more than a dozen leading corporations who participate as CNSF corporate affiliates.

CNSF participants are united by the belief that for the United States to remain secure and economically strong, we must invest systematically in the education of our people and in the creation of new knowledge. We must increase our efforts to ensure full participation for groups, including women, minorities, and the handicapped, who are underrepresented in science and technology. Attracting motivated individuals into careers in science and technology is critical if we are to meet the future labor force needs of the country. Steps must be taken immediately if we are to have a workforce capable of fulfilling the demands in the increasingly technical workplace. Accordingly, the Coalition calls on the federal government to launch a new national investment strategy designed to strengthen substantially research and education. CNSF, therefore, urges the government to take the steps necessary to

- keep the nation a world leader in research and education
- foster technological innovation and increase productivity
- encourage scientific and technological literacy among all citizens.

As a first step toward achieving these goals, CNSF urges Congress to fund the research and education programs of the National Science Foundation at the authorized level, sustain the commitment to meet the goal of doubling investment in NSF by FY 1993, and fund the newly authorized Academic Research Facilities Modernization Program.

U.S. achievement in science and engineering has been second to none. Our research enterprise remains strong, but we no longer can take our preeminence for granted. Our research and education systems, from grade school to graduate school, are being subjected to unprecedented demands and stresses; competition in the international arena is intense.

The nation's position in science and engineering is now jeopardized by weakened commitment to investment in key fields; by inadequate numbers of U.S. citizens pursuing advanced degrees in science and engineering; by outdated research facilities and equipment; and by unprecedented global competition in research, education, and the application of new knowledge. Evidence that we are losing ground continues to accumulate. Recent measures include the declining U.S. market share of technology products. Since 1987, the three corporations registering the most U.S. patents were Canon, Toshiba and Hitachi, not General Electric, IBM and AT&T. The fraction of our population engaged in science and engineering has remained constant for almost 25 years while it has tripled in Japan and West Germany.

As a nation, we invest heavily in research and development. In 1989, total spending will exceed $132 billion—half by industry, half by the federal government. Of this total about $46 billion is for basic and applied research. Since 1980 the growth in R&D spending has been fueled by federally funded defense spending, which has climbed by 200 percent. Increases in defense R&D have accounted for nearly 90 percent of the growth in federal R&D since 1980. As a result, defense now represents two-thirds of the federal R&D budget, up from about 50 percent in 1980. Almost all of the growth in defense R&D, however, has occurred in the development, testing and evaluation of new systems, not in programs of fundamental research or exploratory development.

Colleges and universities perform about half of the nation's basic research, and as they do so they educate our scientists and engineers. Federal agencies are the primary source of national investment in basic research. Among federal agencies only the National Science Foundation has the mission to invest in basic research. It plays a role disproportionate in importance to the nation relative to its share of total federal R&D resources. NSF accounts for 2.6 percent of total federal R&D; 14.7 percent of total federal investment in basic research and nearly 25 percent of basic research funded in colleges and universities. But NSF accounts for nearly half of federal investment in the physical sciences and engineering, fields that are the foundation for future technologies. The Foundation also accounts for about 60 percent of research in environmental sciences, and more than half of total federal investment in math and computer sciences and the social sciences. If the FY 1990 budget is approved, NSF will support 19,000 graduate students as research assistants plus more than 4,000 postdoctoral researchers.

In education, NSF plays an important leadership role developing new approaches to mathematics and science education at the precollege, undergraduate and graduate levels. NSF's leadership in helping to educate a scientific and engineering workforce and a technically literate population is essential. The demand for scientific and technical personnel is expected to increase by 36 percent by the turn of the century. Yet consider the implications of the following recent findings:

- U.S. school children know less about science than their counterparts 20 years ago. In a 1988 study of children in 17 countries, U.S. 10-year-olds ranked 8th and 14-year-olds ranked 14th.

- Our college-age population has been declining since 1980 and will continue to shrink through 1996. Interest in technical careers continues to drop.

- By 2020 women and minorities will comprise about 70 percent of the labor force. Yet women earn only 16 percent of Ph.D.s in the physical sciences, 15 percent in mathematics and 7 percent in engineering.

- Blacks and Hispanics are 20 percent of the population, but they earn fewer than 3 percent of doctoral degrees in science and engineering. It is sobering to consider that this small hearing room could hold all the black citizens who earned the Ph.D. in engineering (12) and physical sciences (16) in 1987.

- We are failing to attract sufficient numbers of U.S. citizens into graduate study. Ph.D. production among U.S. white males also is declining. In 1987, 55 percent of Ph.D.s in engineering were awarded to foreign-born students; the percentage of foreign-born Ph.D. recipients in mathematics rose from 25 percent to 51 percent during the decade of the 1980s.

- By the mid-1990s a surge of faculty retirements will occur, and present policies and trends cast doubt on our ability to replace them.

NSF's education programs are being rebuilt to address more effectively the needs of our schools and undergraduate colleges. Special programs to encourage the participation of women, minorities and disabled persons in science and engineering careers are begin developed. The graduate fellowship program, including special initiatives for women and minorities, will take another step toward doubling by FY 1992. We urge your full support for the education activities being developed across the Foundation.

Academic Research Facilities

Laboratories in many of our research institutions are in serious disrepair. This fact coincides with the steady two-decade decline in federal support of academic and other nonprofit research facilities and equipment. Recent NSF surveys reveal that while $3.4 billion is being spent on construction of academic research facilities, about $8.5 billion of needed construction is being deferred. While universities are spending about $777 million for the repair and renovation of their laboratories, $2.8 billion is being deferred. For every dollar universities are spending on new laboratory construction, they are deferring $2.50. For every dollar they spend on repair and maintenance, they defer $3.60. Other surveys confirm the size of the problem.

The ability of universities to maintain even current levels of investment is in doubt. NSF reports that the cost of construction for research laboratories increased at a pace of 30 to 35 percent per year over the period of 1986-89.

Three years ago, the White House Science Council called for a new research facilities program in NSF funded at a "necessary minimum" of $500 million per year.

Just last week Dr. Frank Press, President of the National Academy of Sciences, urged a government-wide effort by all science agencies funded at $1.25 billion per year.

Last year, Congress took the first step toward a comprehensive federal investment policy for research facilities by creating in NSF the Academic Research Facilities Modernization Program. The program was a special priority of Congress, and it was authorized as an addition to the projected doubling of NSF's research and education programs. This program is the first new facilities authority in more than twenty years. It ought to be the first step toward a comprehensive policy for research facilities. The facilities investment partnership among the federal government, state government, universities, industry and others must be reestablished, and to do so federal leadership will be required.

Mr. Chairman, the Coalition also is keenly aware of the sustained support which this Subcommittee has given to NSF and to the nation's research and education enterprise. We are grateful to you for your commitment and leadership, and we commend you for it.

Thank you for the opportunity to present this statement. I shall be pleased to respond to questions.

STATEMENT OF DR. ROBERT E. PARILLA, MONTGOMERY COLLEGE

Senator Kerrey. Dr. Parilla from Montgomery College.

Dr. Parilla. Senator Kerrey, thank you for letting us discuss the National Science Foundation budget, particularly to offer support for the division of undergraduate science, engineering and mathematics education for the science and engineering education directorate.

I am president of a community college located in Maryland. Last October, the Science and Engineering Education Directorate established a national workshop concerned with technical education in 2-year colleges.

I chaired that workshop which produced a report including recommendations for the NSF. Some of the national problems we considered in that workshop include the national shortage of scientists, mathematicians, and engineers, that not nearly enough Americans are prepared in those fields, and very few minorities and women enter those technical fields.

Two-year colleges today in the United States enroll about one-half of all freshmen, over one-half of the minorities and women who attend college. Very few of these students choose a technical field to study.

ENROLLMENT IN TECHNICAL AREAS DECLINES

As a matter of fact, enrollment in technical areas declined between 1978 and 1986. That's a terrible waste of opportunity. The 2-year colleges are a very significant, untapped resource to help address these problems.

The National Science Foundation long-range plan has three central roles, one of which is to enhance science and engineering education and human resource development and broadened participation in science and engineering by minorities, women, and other undergraduate groups.

The National Science Foundation goal and the national issues can be addressed in large measure if we turn the potential of the 2-year colleges to these issues. To achieve this, there needs to be a much stronger leadership role and funding position by the National Science Foundation for 2-year colleges.

The vast majority of funds provided by the National Science Foundation go to research even though the NSF role is to enhance both scientific research and scientific education.

The current administration has called for a doubling of the National Science Foundation budget, which is an opportunity to address the research and education. At least as much new money should go for enhancing education as will go for research.

I'm not proposing that research dollars are misspent. They are wisely spent. I'm not proposing to reduce the dollars spent on research. It's a wise investment.

I am proposing that education get at least equal attention with all the new funds. I'm not asking for set-asides or entitlements for community colleges, but I am proposing that most new educational dollars should be targeted to the lower division of mathematics and science and engineering education.

I firmly believe that we'd greatly strengthen the freshman and sophomore courses. We will get more people to begin and stay with science, math and engineering if we strengthen these programs to specifically attract minorities and women; we'll have a chance to reach the NSF long-range goal.

I believe that, to do this, we not only need more resources devoted to education, but I think the National Science Foundation should consolidate all of its undergraduate education programs in the science and engineering education directorate. That directorate should establish within its undergraduate division an office whose purpose is to strengthen the lower division science, math, and engineering courses.

My final recommendation is that there are no 2-year college experienced people on the National Science Board, and it seems to me that at least one of those positions ought to be held by a person with a science background from one of the 2-year colleges.

[The statement follows:]

STATEMENT OF ROBERT E. PARILLA

Madam Chair, Senators, thank you for the opportunity to discuss the National Science Foundation budget and particularly offer support for the Division of Undergraduate Science, Engineering and Mathematics Education of the Science and Engineering Education Directorate.

I am the president of a three campus community college located in Montgomery County, Maryland which serves approximately 21,000 credit students in lower division (freshman and sophomore) courses. Last October the Science and Engineering Education Directorate established a national workshop of educators and business people concerned with science, mathematics and engineering at two-year colleges. I chaired that workshop which produced a report including recommendations for the National Science Foundation.

Gai Trish, Ph.D.—director of research at a major corporation
Josephine San, practicing chemical engineer
Desiree Raymond, Ph.D.—associate professor at the University of Wisconsin
Amil Narang, M.D.—practicing physician
Terry Furlow, M.D.—practicing physician
William Relfert, D.D.S.—practicing physician
Arthur Colvin—president, biotechnology company

Judy Ungal—chemist working in cool liquefication research
Mark Thompson, Ph.D.—research chemist at DuPont
Cindy David—completing Ph.D. in biochemistry at University of California San Diego
Steven Fisher—electrical engineering technician for major corporation

What do these people have in common? They, like many other scientists, engineers, mathematicians and technicians, began their post high school education at Montgomery College. This list could be expanded, of course, and similar lists could be developed by every two-year college in America. But, while there are significant successes, there are also significant issues in community colleges which could be addressed with National Science Foundation help that would help us address the shortage of scientists, mathematicians and engineers.

Some serious national problems we hear a good deal about include: (1) Not nearly enough Americans are preparing for technical fields; (2) very few minorities or women are entering technical fields; (3) the general population's scientific literacy is very poor; and (4) there is a serious and widening gulf between the haves and have-nots, and one reason is that the have-nots possess very little ability in, or understanding of, uses of technology. Their lives are more likely to be controlled by technology than to be favorably affected by it.

The two-year colleges in the U.S. enroll 4.7 million students, 55 percent of all first time freshmen and over half of the minorities and women who attend college, but very few of these students choose a technical field to study. As a matter of fact, the enrollment in technical areas declined between 1978 and 1986. This is a terrible waste of opportunity. The two-year colleges with so many students, with so many minority and female students, with so many students who are undecided about a major, are a very significant untapped resource to help address the problems mentioned earlier.

The National Science Foundation's 1989–93 long-range plan has three central goals, one of which is: "To enhance science/engineering education and human resource development, and to broaden participation in science and engineering by minorities, women and other underrepresented groups." My view is that the National Science Foundation goal and the national issues I mentioned earlier, can be addressed in large measure if we turn the potential of the two-year college to these issues.

To achieve this, there needs to be a much stronger leadership role and funding position by the National Science Foundation toward the two-year colleges. The vast majority of funds provided by the National Science Foundation go to research even though the National Science Foundation role is to enhance both scientific research and scientific education. Since 1980 the increase in funding for research has greatly overshadowed the funding increase for education. The current administration has called for a doubling of the National Science Foundation budget which is an opportunity to address this research/education imbalance. At least as much new money should go for enhancing education as research. I am not proposing that the research dollars are misspent—they are wisely spent; I'm not proposing to reduce the dollars spent on research—it is a wise investment. I am proposing that education get at least equal attention.

I am also not asking for set-asides nor entitlement programs for community colleges—I am proposing that most new educational dollars should be targeted to all lower division science, mathematics and engineering education. I firmly believe that if we greatly strengthen freshman and sophomore courses we will get more people to begin and to stay with science, mathematics or engineering study. If we strengthen the freshman and sophomore programs to specifically attract minorities and women, we will have a chance to reach the National Science Foundation goal. The National Science Foundation fiscal year 1990 budget is a beginning in that it proposes to increase undergraduate education support by 63 percent to $105 million—that's great, but it is only a start because the total National Science Foundation budget requested is for $2.15 billion.

Specifically, the education programs of the National Science Foundation must include and emphasize programs for faculty development, curriculum, and instructional development and laboratory development for the lower division in colleges.

We must place stronger emphasis on the improvement of introductory courses and I believe that to do this we not only need more resources devoted to education, but also the National Science Foundation should consolidate undergraduate education programs in the Science and Engineering Education Directorate. The SEE should establish within its undergraduate division an office whose purpose is to strengthen the lower division science, mathematics and engineering courses.

My final recommendation is that the National Science Board should remedy the fact that it does not include a single member from the two-year college community.

Thank you for your attention. In addition to this testimony, I have included a copy of the Report of the National Science Foundation Two-year College Workshop.

Senator **Kerrey**. Thank you.

Father George. Father Collins.

Father **Bradley**. Neither, Mr. Chairman. I am Father Bradley, Assistant to the President at Georgetown University. My area is international education, but I won't even comment on the Father's testimony, so I'll submit it for the record.

Senator **Kerrey**. Well, you stayed within your time. [Laughter.]

Father **Bradley**. I was afraid you would ask me a question. I can't even pronounce the names.

Senator **Kerrey**. Where's Father George and Father Collins?

Father **Bradley**. Father George's mother is very sick, so he had to be with her. Father Collins is out of town, so they suited me up.

Actually, I don't ordinarily wear this suit. [Laughter.]

Thank you very much.

Senator **Kerrey**. That concludes this panel. Thank you very much.

[The statement follows:]

STATEMENT OF FATHER WILLIAM L. GEORGE, S.J.

Ms. Chairperson and members of the Committee, I am Father William L. George, S.J., Assistant to the President of Georgetown University.

On behalf of Georgetown University, I would like to thank this committee for the opportunity to testify in support of fiscal year 1990 funding of the National Science Foundation.

We commend this committee for recognizing the critical importance of strong financial support for the National Science Foundation, which makes possible the scientific leadership of the United States through its work with institutions of higher education. We therefore urge the committee to accept the President's proposal to increase in NSF funding to $1,803,022,000 from the fiscal year 1989 level of $1,583,000,000.

We stand in agreement with the American Council on Education in affirming the vital role played by the National Science Foundation in ensuring the quality of education in the nation. The NSF makes important contributions, especially through its Science and Engineering Education Directorate, to pre-college mathematics and science education, and effectively supports college science instrumentation and other essential undergraduate research and education activities. And through the fellowships and assistantships sponsored by the NSF, the national needs are increasingly being met for highly skilled personnel who can make important contributions to the teaching and scholarly professions and who can address serious shortages of graduate faculty which threaten the future vitality of scholarship, research, and training in many disciplines.

Georgetown University has competed for and been awarded several major grants for programs in various disciplines, totalling over $4.6 million (see attached chart). These initial grants have inspired the University to contribute approximately seven times this much from our own funds toward research programs. We can therefore attest to the importance of the programs sponsored by the National Science Foundation in aiding higher education across the United States.

Concerning the scientific facilities modernization plan, Georgetown University supports the position of the Association of Jesuit Colleges and Universities. If this program is funded, we recommend the following allocation of monies: one third to research universities, one third to emerging universities, and one third to four-year colleges.

Recipient	Grant subject	Award
L. Walters	Ethical issues in human gene therapy	$83,926
S. Stoler	NSFNET	20,000

Recipient	Grant subject	Award
E. Henderson	Development regulating functions	45,000
J. Neale	Photomicroscope	34,000
E. Henderson	Dictnystelium discoiderum	110,987
D. Martire	Basic studies in gas and liquid chromatography	773,250
R. Weiss	Influence of solvent ANI's	271,600
D. Yang	Mammalian amnioacyl	40,000
M. Kertesz	Electructure of pristines and polymers	84,000
D. Martire	SFC award on molecular and thermodynamic properties	24,340
G. Gniochon	Studies in nonliniear chromatography	169,005
R. Weiss	Chiral molecular cylinder	30,000
M. Pope	Chemical oxomelates	232,000
R. Delevia	Nucleation/growth study	189,021
R. Delevie	Development of receptor electrons	110,000
D. Martire	Liquid chromatography	9,100
J. Cherniavsky	Theory seminar	6,954
H. Engler	Mathematical studies	22,658
H. Engler	Properties of equations	9,613
J. Sandefur	Modeling with discrete mathematics	449,733
F. Neubrander	Semi groups cauchy problem	20,792
P. Treado	National nuclear physics summer school	66,000
M. Culnan	Decision making	29,074
Balzer/Feschbach	Russian area studies	396,841
D. Hernandez	Long-term trends in summer planning	57,289
J. Chirikjian	Biochemistry	355,000
J. Chirikjian	Biotechnology workshop	529,587
J. Butler	Institutional allowance	3,064
R. McGee	Nural Nicotinic Receptor	164,994
C. Colton	Spectrophotometer	47,709
D. Kasbekar	Transgastric pariet cell	155,500
C. Colton	Synaptic transmission	71,745
Total		4,652,867

PANEL NO. 2

Panel 2 is Dr. Alexander Dybbs, Dr. David VandeLinde, Dr. Clayton Callis, and Dr. Paul Gassman.

Dr. Dybbs.

STATEMENT OF DR. ALEXANDER DYBBS, AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Dr. DYBBS. Mr. Chairman, we appreciate the opportunity to submit our views on the proposed fiscal year 1990 budget request for the National Science Foundation.

The American Society of Mechanical Engineers is a nonprofit, educational, and technical society of practicing mechanical engineers. It was founded over 100 years ago, and includes over 116,000 professionals, 70 percent of whom are from industry, 10 percent from academia, and the rest are students.

We are in an age of technology to a great extent, the future economic strength of the United States will depend on maintaining superiority in this technology.

BASIC SCIENTIFIC AND ENGINEERING RESEARCH CRITICAL

Most of the technological advances of the century from radar to nuclear power, from the transistor to the laser, from computers to communications have been critically dependent on a basic scientific and engineering research; that has typically been supported by the National Science Foundation.

Engineering plays a key role in maintaining and strengthening these technology bases. Engineers and engineering research provide the technology transfer link between purely scientific advances and the introduction of new processes and products.

Unless we continue to invest in this technology, the ability of the United States to maintain leadership in existing technologies and develop new technologies will be significantly impaired.

Already, the effects of this loss of competitiveness are evident. It translates into lost jobs, trade imbalances, and a lower standard of living.

We endorse the administration plan to double the NSF budget by 1993 and we urge Congress to keep this plan on track.

Our comments will focus primarily on budget requests for the engineering programs of the National Science Foundation. In this regard, we urge Congress to increase NSF funding so that the engineering directorate can grow to more than 10 percent of the total NSF budget.

We believe this increase is justified because the resources of the engineering directorate are used to provide the engineering/science base to improve the competitiveness of the U.S. industry, to improve the quality of education and research, to enhance technology transfer, and speed the commercialization of new technologies.

And, third, provide advance education for engineers for whom there is an increasing shortage in many industries.

Our written statement includes a number of examples of technology bases. What we would like to do is to indicate to you that these increases are important and that the impact of engineering and engineering research on U.S. competitiveness is important, in many areas supported by the NSF both generic and problem-oriented.

The U.S. public is very concerned, Mr. Chairman. There's an article that appeared in the Wall Street Journal about standards of living. Many Americans fear U.S. living standards have stopped rising, lag in productivity.

A week doesn't pass that we don't get articles like this, or new stories on TV and the radio that refer to lack of competitiveness.

We think that the support that the NSF budget, particularly the engineering end of the budget, is important to maintain.

We urge your support.

[The statement follows:]

STATEMENT OF DR. ALEXANDER DYBBS

Madam Chair and Members of the Committee:

We appreciate the opportunity to submit our views on the proposed fiscal year 1990 budget request of the National Science Foundation. The American Society of Mechanical Engineers (ASME), is a non-profit educational and technical society of practicing mechanical engineers. ASME was founded over one hundred years ago, and today its membership exceeds 116,400 professionals in mechanical engineering, approximately 70 percent are from industry, 10 percent from academia and the remainder are mostly students and retired members. ASME members practice in industries crucial to the economic vitality of U.S., including automotive, aerospace, biomedical, chemical, energy and manufacturing. Because of NSF's prominent role in mechanical engineering research and education, ASME has a long and continuing history of interest in both the immediate and long term direction of NSF.

This statement was prepared by a task force of the Council on Education of ASME and represents the consensus of that group rather than an official position of ASME.

We are in an age of technology. To a great extent, the future economic strength of the United States will depend on maintaining superiority in technology. Most of the spectacular technological advances of this century, from radar to nuclear power, from the transistor to the laser, from computers to optical communications, have been critically dependent on the basic scientific and engineering research that has been typically supported by NSF.

Engineering plays a key role in maintaining and strengthening this technology base. Engineers and engineering research provide the technology transfer link between purely scientific advances and the introduction of new processes and products. Unless we continue to invest in this technology base, the ability of the U.S. to maintain leadership in existing technologies and to develop new technologies will be significantly impaired. Already the effects of this loss of competitiveness are evident. This loss of technological superiority translates into lost jobs, trade imbalances and into a lowered U.S. standard of living.

We endorse the administrations plan to double the NSF budget by 1993 and we strongly urge Congress to keep this plan on track. Our comments will focus primarily on the budget requests for the engineering programs of the Foundation. In this regard we urge Congress to increase NSF funding so that the Engineering Directorate can grow to more than 10 percent of the total NSF budget. We believe that this increase is justified because the resources of the engineering directorate are used to: (1) provide an engineering science base to improve the competitiveness of U.S. industry; (2) provide engineering education and research to enhance technology transfer and speed commercialization of new technologies; (3) provide advanced education to engineers for whom there is an increasing shortage in many industries.

OVERVIEW: NSF ENGINEERING BUDGET

The fiscal year 1990 budget request for the NSF Engineering Directorate is $211.2 million. This request is an increase of $23.9 million or 12.8 percent over the current fiscal year 1989 plan of $187.3 million. We are disappointed that the increase is smaller than the proposed 14 percent increase for NSF overall. Almost from its inception in fiscal year 1979, the NSF Directorate's budget has been about 10 percent of the total NSF budget. This despite the growth in the NSF budget over the last few years and despite the fact that engineers and engineering research are critical elements to maintaining and developing leadership in those technologies crucial for U.S. industrial competitiveness.

This budget trend has had two effects: To motivate more engineering research on Department of Defense projects than on those technologies relevant to U.S. competitiveness and to limit to inflationary or less budget increases in generic engineering science programs.

In fiscal year 1985, NSF supported a larger fraction of engineering research at universities than any other federal agency. Today, the Department of Defense is the largest source of funding for engineering research at universities. We do not believe it is in the nation's best interest for engineering research at U.S. universities to become dominated by a mission oriented sector of the Federal Government. If allowed to continue, this trend will seriously limit research on those technologies so critical to the re-establishment of U.S. industrial competitiveness in the global marketplace.

The technological advances of this century required a sound foundation in generic engineering science. Many of the R&D programs receiving strong emphasis now, within and outside NSF—some of which are slated for increased emphasis in fiscal year 1990—will suffer unless they are built upon a strong generic engineering science base.

For example, the Strategic Highway Research Program (SHRP), which is being carried out by the National Research Council under legislation passed by Congress last year, is an important program. Without it our huge investment in highways, which forms such a critical infrastructure for our whole way of life, would be in jeopardy. The program itself is aimed at short term solutions of some of the most critical problems. Somebody, presumably NSF, should be looking at the longer range solutions. In our judgment, these solutions cannot be achieved without strengthening the generic engineering science base critical to understanding. For instance, what are the factors that provide greater durability in reinforced concrete structures? How can we carry out meaningful non-destructive evaluation of these structures, and how can we develop better specifications in this area?

As another example, the only clearly identifiable support of the critical area of lifetime cost of products is the proposed increased emphasis on "computer modeling for life-cycle engineering." While this increase is laudable, it addresses only a very small element of the total need. Both the military and civilian economy are beginning to recognize the urgent need of strengthening the methodologies required to design for maintainability.

These cover some sophisticated and complex technologies, from adaptive control to expert systems. The need for stronger research support in these areas is critical to national defense and to reestablishing our country's industrial competitiveness.

We support the programs of the Engineering Directorate to "revitalize the engineering undergraduate enterprise" by doubling funding in fiscal year 1990 from $6.9 to $14.9 million. This is an important first step in the improvement of undergraduate engineering education. NSF has the unique opportunity to work with educators and professional societies to conceive, advise and demonstrate innovations in engineering education.

CONCLUSIONS AND RECOMMENDATIONS

We support the proposed increases for the fiscal year 1990 NSF budget and endorse the Foundation's commitment to developing and sustaining a high level of federal support for both engineering research and education. Given the impact that engineering has on U.S. economic competitiveness and the importance of NSF to many areas of generic and problem oriented engineering research, it is essential that Congress approve the proposed fiscal year 1990 NSF budget.

This proposed budget increase can help NSF balance its support for problem oriented programs that foster economic vitality with those that ensure the long-term health of generic research.

Further we urge Congress to increase the NSF funding level so that the Engineering Directorate can grow to more than 10 percent of the total NSF budget. This increase is necessary because the programs of the Engineering Directorate are important to the education of future engineers, to the maintenance of technological leadership in many fields and industries, to the enhancement of technology transfer and to the impact on U.S. competitiveness.

It is our hope that the Subcommittee will view the budget as an important investment in the nation's economic and industrial future, the rewards of which the nation will reap many times over.

STATEMENT OF DR. DAVID V. VANDELINDE, AMERICAN SOCIETY FOR ENGINEERING EDUCATION

Senator **Kerrey**. We have Dr. David VandeLinde.

Dr. **VandeLinde**. Good morning, Mr. Chairman.

I'm dean of engineering at the Johns Hopkins University, in chair of the Engineering Education Task Force, a multisociety group concerned with engineering research issues.

On behalf of the task force, I would like to thank you for this opportunity to present our views on the fiscal year 1990 budget request of the National Science Foundation in urging your support for significantly increasing the NSF budget.

I would like to focus on a key issue in engineering education, the present and future supply of the Nation's engineering talent, often called the student pipeline.

As our Nation grows increasingly reliant on technology for economic health and national security, our need grows for engineers. Since 1972, the employment of engineers has grown faster than the general employment and is expected to do so until the turn of the century.

DECLINE IN U.S. ENGINEERING GRADUATES

Yet, the number of U.S. engineering graduates peaked in 1986 and has been going down. This is caused by a number of factors, including the reduced number of college age students, the major source of engineering talent.

Moreover, despite significant gains in the 1970's and the early 1980's, the number of women engineering undergraduates has held steady at about 15 percent, and minority students remain seriously underrepresented in engineering.

The problem is even greater at the graduate level. Because an engineer can begin a professional career with a baccalaureate degree and a relatively high starting salary, U.S. engineering students often have little incentive to continue their studies in a full-time graduate program.

As a result, we have had a chronic shortage of engineering faculty in the past several years. This shortage has been masked by the large number of foreign born graduate students, about one-half of whom stay in the United States.

The situation will worsen in the mid-1990's; 25 percent of engineering faculty will be of age 65 in the 1990's and many are expected to retire.

This will happen at the same time that industry and Government have an increased demand for high-level engineering talent. The National Science Foundation has taken up the leadership in addressing some of these issues at the pre-college level NSF programs to improve mathematics and science teaching and finding ways to make technical fields more accessible and interesting to more students.

We strongly support continued efforts at this level. At the undergraduate level we are pleased that after several years of inactivity, NSF has established new undergraduate education programs.

This is of special importance to engineering because more than 70 percent of our graduates began careers in industry right out of college.

The plan to increase funding to $105 million in fiscal year 1990 is a valuable step. Larger increases would be beneficial. Since a major priority in engineering education is continual upgrading of the curriculum, we particularly commend NSF for planning to increase funding for engineering curriculum redesign from $2 million this year to $8 million in 1990 through which graduate and research programs and grants, NSF provides crucial incentives for engineering students to earn their doctoral degrees and to undertake faculty careers in addition to increasing the number of new graduate fellowships in fiscal year 1990 to 960.

For the first time, 80 new graduate fellowship awards are reserved for women. NSF research programs also play an important role in supporting the graduate student pipeline.

In 1987, research grants awarded by the National Science Foundation supported more than 3,400 engineering graduate students. Given the magnitude of the pipeline problem, we cannot expect NSF to make the difference by itself.

The Federal mission agencies also play a strong role in this effort along with State and local governments, industry and our educational institutions themselves.

Yet, we looked at NSF for leadership in identifying the problems in technical education and in providing funds that can be broadly leveraged to solve them.

For these reasons, we urge you and the subcommittee to provide the National Science Foundation with the requested budget. It is a high payoff investment in the Nation's technological future.

[The statement follows:]

STATEMENT OF DR. V. DAVID VANDELINDE

Madam Chair and Members of the Subcommittee:

My name is David VandeLinde. I am dean of engineering at the Johns Hopkins University and chair of the Engineering Education Task Force, a multi-society group concerned with engineering research and education. On behalf of the Task Force, I would like to thank you for this opportunity to present our views on the fiscal year 1990 budget request of the National Science Foundation.

In urging your support for significantly increasing the NSF budget, I would like to focus on a key issue in engineering education: the present and future supply of the nation's engineering talent, often called the "student pipeline."

As our nation grows increasingly reliant on technology for economic health and national security, our need increases for engineers. Since 1972, employment of engineers has grown faster than general employment and is expected to continue to do so through the turn of the century.

Yet the number of U.S. engineering graduates in the U.S. peaked in 1986 and has been going down. This is caused by a number of factors including a reduced number of college-age students, the major source of engineering talent. Moreover, despite significant gains in the 1970's and early 1980s, the number of women engineering undergraduates has held steady at about 15 percent and minority students remain seriously underrepresented in engineering.

The problem is even greater at the graduate level. Because an engineer can begin a professional career with a baccalaureate degree at a relatively high starting salary, U.S. engineering students often have little incentive to continue their studies in full-time graduate programs.

As a result, we have had a chronic shortage of engineering faculty over the past several years. This shortage has been masked by the large number of foreign-born graduate students, about half of whom stay in the U.S. The situation will worsen in the mid-1990's: 25 percent of engineering faculty will be age 65, and many are expected to retire. This will happen at the same time that industry and government have an increased demand for high-level engineering talent.

The National Science Foundation has taken leadership in addressing these issues. At the precollege level, NSF programs have improved mathematics and science teaching and found ways of making technical fields more accessible and interesting to more students. We strongly support these efforts.

At the undergraduate level, we are pleased that after several years of inactivity, NSF has established new undergraduate education programs. This is of special importance to engineering because more than 70 percent of our graduates begin careers in industry right out of college. The plan to increase funding to $105 million in fiscal year 1990 is a valuable step; larger increases would be beneficial. Since a major priority in engineering education is continual updating of the curriculum, we particularly commend NSF for planning to increase funding for engineering curriculum redesign from $2 million this year to $8 million in fiscal year 1990.

Through its graduate programs and research grants, NSF provides crucial incentives for engineering students to earn their doctoral degrees and undertake faculty careers. In addition to increasing the number of new graduate fellowships in fiscal year 1990 to 960, for the first time 80 new graduate fellowship awards are reserved for women in engineering. NSF research programs also play an important role in supporting the graduate student pipeline: in 1987, research grants awarded by NSF supported more than 3,400 engineering graduate students.

Given the magnitude of the pipeline problem, we cannot expect NSF to make the difference by itself. The federal mission agencies also play a strong role in this effort, along with states and local governments, industry and our educational institutions themselves. Yet we look to NSF for leadership in identifying the problems in technical education and in providing funds that can be broadly leveraged in solving them.

For these reasons, we urge you and the Subcommittee to provide the National Science Foundation with the requested budget. It is a high pay-off investment in the nation's technological future.

STATEMENT OF DR. CLAYTON CALLIS, AMERICAN CHEMICAL SOCIETY

Senator **Kerrey**. Dr. Callis.

Dr. **Callis**. Senator Kerrey, my name is Clayton F. Callis. I am current president of the American Chemical Society, with over 137,000 members. This is the world's largest scientific organization.

I am pleased to appear today to comment on the fiscal year 1990 budget request for the National Science Foundation. I believe this subcommittee is committed to restoring the scientific literacy of the general public and I support you in this commitment.

What we're talking about is a public that can deal with technical matters in a rational way and from which will come the scientists of the future.

SCIENTIFIC LITERACY ESSENTIAL

The educational system in the United States is the best avenue for ensuring the scientific literacy of these future generations.

The American Chemical Society sees current efforts to provide a science and mathematics education to all students as insufficient. The demographics are known. The career choices of young people, especially for the growing minority population, is no one reason for optimism.

Fewer and fewer American students are studying graduate science and engineering each year.

The NSF plays a vital role in supporting science and engineering education. The NSF's programs provide a focal point for addressing this critical problem. These include teacher education, curriculum development, and efforts to attract and retain students who are interested in the sciences.

NSF also plays a critical role in promoting the involvement of minorities and women in the scientific enterprise, groups which continue to be severely underrepresented, as you've heard already this morning.

The American Chemical Society fully supports the targeting of NSF programs of minorities and women as a means of redressing this imbalance. This must be done at the primary and secondary levels with good teachers. That's where NSF can play a vital role.

The American Chemical Society considers the current budget for the Foundation's science and engineering education directorate to be grossly under-funded.

Current funding is still only about one-third of the level for these programs in fiscal year 1968 in constant dollars or in spending power.

We can't change the past, but we must work to ensure that future generations will have a healthy attitude toward an understanding of science and technology.

But, without substantial increases, the Foundation cannot provide the support needed to tackle the educational crisis facing this Nation.

An increase to the education directorate's budget of $600 million over a 4-year period has been requested in two most recent education reports of the National Science Board.

In order to gain momentum, the ACS urges that an increase of at least $60 million be added to the education directorate's current level of funding.

Thank you for this opportunity to comment today.

Senator KERREY. Thank you, Dr. Callis.

[The statement follows:]

STATEMENT OF DR. CLAYTON F. CALLIS

Madam Chair and members of the subcommittee, my name is Clayton F. Callis. I am the current President of the American Chemical Society (ACS) which, with over 137,000 members, is the world's largest scientific organization. I am pleased to appear before you today to comment on the fiscal year 1990 budget request for the National Science Foundation (NSF).

The United States is currently faced with the challenge of increasing competition among nations. As American government and industry struggle to maintain preeminence in the economic and technological arenas, the Nation is forced to reevaluate its priorities.

Education and basic research related to the education and training of scientists at U.S. colleges and universities must continue to be a priority for federal support. Without such support, the U.S. cannot effectively produce the teachers who will raise the level of scientific literacy among the Nation's students, nor can it train and educate the next generation of scientists, engineers, and technicians who will be needed to develop products, and to perform the research which leads to them. Neither can the U.S. extend the knowledge base of the basic sciences and engineering, which is the wellspring for innovation and new product development.

The National Science Foundation plays a pivotal role in supporting science education and academic research. NSF programs promote science education among youth and minorities, and the Foundation is the primary funding source for academic basic research in many disciplines.

Thus, the American Chemical Society is distressed to learn that NSF's fiscal year 1990 request is 10 percent below the authorized level. The intent of the five-year authorization, which was passed in the second session of the 100th Congress, was to double the funding for the Foundation's programs by fiscal year 1993. Clearly, this cannot be achieved at a steady growth rate unless NSF requests the levels specified in the authorization.

This Nation must strengthen and emphasize science education at all levels in order to maintain and improve our competitive position worldwide, and to provide the technically literate workforce needed in the future. NSF's fiscal year 1990 request for the Science and Engineering Education Directorate is insufficient to achieve these goals.

In order to gain momentum, the American Chemical Society urges Congress to fund the Science and Engineering Education Directorate at $231 million. The additional funding requested by ACS—$60 million above fiscal year 1989—will bring the budget in line with the recommendations of two National Science Board reports, Educating Americans for the Twenty-First Century, and Undergraduate Mathematics, Science, and Engineering Education (the "Neal Report").

The National Science foundation provides the essential federal support for research that is driven by the best ideas of university researchers, in contrast with the focused research agendas of many of the mission-oriented agencies. Such federal support is critical to the maintenance of a healthy research environment in the United States.

The ACS recommends that Congress appropriate the full $1.91 billion for Research and Related Activities as previously authorized. This level of support is $32 million above fiscal year 1989.

It should be noted that both recommendations refer to the addition of "new monies." The Society agrees with the decision by Congress, in the fiscal year 1989 appropriation, that the recently authorized academic facilities modernization program should not be funded at this time if it comes at the expense of the Foundation's existing research activities. This conclusion should be carried forward into fiscal year 1990 budget decisions, despite the growing need for new or refurbished facilities. Similarly, new Science and Technology Centers should not be funded at the expense of needed expansion for other activities in the research divisions.

ACS is supportive of the continuing thrusts in interdisciplinary research, as well as the cross-directorate human resource and education initiatives that are funded in the research divisions. However, the Society believes that while these initiatives are growing, many research opportunities in the core research disciplines are underfunded. A healthy discipline is built upon cutting-edge research in the core fields. It also depends upon modern instrumentation and facilities. The Society believes that NSF should follow a course that provides a balance among different research areas and types of research activities. Given recent attention to new research thrusts and cross-directorate programs, the ACS firmly believes that funding for the core research fields must now become a high priority.

The accompanying Appendix contains the Society's recommendations in greater detail. The ACS contends that the Foundation's role in promoting science education and research is crucial to U.S. economic well-being. In order for the Country to advance economically, it is imperative that Congress fully support the recommended increases for education and research at NSF for fiscal year 1990.

STATEMENT OF DR. PAUL G. GASSMAN, COUNCIL FOR CHEMICAL RESEARCH, INC.

Senator KERREY. Dr. Gassman.

Dr. GASSMAN. I am Professor Gassman of the University of Minnesota and Chairman of the Council for Chemical Research. It has members in 157 universities where nearly all of the academic research in the chemical sciences is carried out.

Fifty-five major companies carry out most of the corresponding industrial research. The Council for Chemical Research was formed 10 years ago to help improve the U.S. economy, competitiveness, and the quality of life by strengthening the interaction between academia and the chemical industry and by supporting strong funding for basic research in chemistry and chemical engineering.

Recent statistics published by the Industrial Research Institute indicate that there are 600,000 scientists and engineers involved in industrial research development in the United States.

Of these 600,000 individuals, 37 percent are chemists, 13 percent are chemical engineers. Thus, it's no surprise that we enjoyed a $10 billion net balance of trade in 1988 in the area of chemistry.

We stand in grave danger of losing this competitive edge. The supply of trained scientific personnel for the chemical industry is dwindling. We know what the supply of new Ph.D.'s in the field of chemistry will be through the year 2000.

Only in the case of a massive economic collapse will there be sufficient scientific personnel to supply our Nation with its needed manpower in the chemical sciences.

By the mid-1990's, Germany will graduate approximately as many German-born Ph.D. chemists per year than the United States will produce U.S.-born Ph.D. chemists; unless we make dramatic inroads in the next few years, we are almost certain to lose our competitive worldwide edge in the area of chemistry.

The National Science Foundation plays a unique role in the education of scientists through its funding for much of the basic research which is done in the chemical sciences.

The Council for Chemical Research is in strong agreement with the intent to double the National Science Foundation budget over 5 years.

Within the context of the approved 5-year authorization, we would urge Congress to appropriate $1.91 billion for research and related activities for fiscal year 1990.

We recognize that this is more than the NSF request of $1.803 billion for research and related activities.

However, we feel we must reverse the trend which, this year, witnessed the 4 percent decrease in the constant dollars available for individual investigators in the chemistry division of NSF relative to 1988.

This represented a cutback in our investment in fundamental research.

We also strongly recommend that Congress allow the full NSF request of $190 million for science and engineering education.

I wish to emphasize our severe concern about the level of support for basic physical sciences. The Ph.D. granting institutions of the United States are already experiencing a shortage of qualified faculties in chemistry.

The situation will worsen dramatically as the post-Sputnik faculty start to retire in the mid-1990's. Unless major efforts are made to provide increased support for both fundamental research and for educational objectives of basic sciences, we will see a dramatic decline in faculty, students, and the resultant scientists which have made our chemical industry so strong.

We can easily slip from a Nation that is a world leader in the chemical sciences to the one that is no longer a major player in the world chemical market.

Thank you.

[The statement follows:]

STATEMENT OF DR. PAUL G. GASSMAN

Madam Chair and Members of the Subcommittee:

I am Paul Gassman, Regents' Professor of Chemistry at the University of Minnesota, and Past Chairman of the Council for Chemical Research. It is a privilege to provide testimony to your distinguished Subcommittee, bringing you the views of the Council for Chemical Research on the budget request for the National Science Foundation. NSF appropriations represent a relatively small part of the Federal budget, but there is no more important funding in determining the kind of future this country will have.

The Council for Chemical Research, formed ten years ago, works to improve the U.S. economy, competitiveness, and quality of life. We do this chiefly by strengthening interactions between academia and industry in the chemical sciences, and by supporting strong funding for basic research in chemistry and chemical engineering.

Our members are the 157 universities where nearly all the U.S. academic research in the chemical science is done, and the 55 major companies which carry out most of the corresponding industrial research.

The major source of support for this nation's scientific research in universities is the Federal Government. The support is uniquely well repaid by the chemical industry which in 1988 produced a net positive trade balance of over $10 billion. We believe this $10 billion trade surplus to be unique among technological disciplines.

Healthy support of basic research in these fields is important to everyone. Their potential for benefiting society grows daily. Not only economic gain, but many other benefits flow from this discipline: food, energy, medical advances (including biotechnology), materials (including superconductors). It is unmatched in its dual strengths of service to society and scientific excitement.

Other areas of science and engineering offer similar, though perhaps less sweeping, benefits. The vital role of science and engineering leads directly to the conclusion that the FY 1990 request for the National Science Foundation's research and education programs is minimal, and should be fully allowed by the Congress.

We agree with the intent to double the NSF budget in 5 years. In that light, the FY 1990 request is severely constrained and should be increased to the level of $1.91 billion in order to achieve the approved 5-year goal. We must reverse the trend which last year witnessed a 4% decrease in the constant dollars available for individual investigators sponsored by the Chemistry Division of NSF relative to 1988. This decrease represented a decline in our annual investment in fundamental chemical research.

The least that we can recommend to the Congress is allowing the full NSF request of $1.803 billion for research and related activities and $190 million for science and engineering education. We urge the Congress, beginning with the Committees on Appropriation, to adopt its own commitment to the 5-year doubling, in the interest of a strong national future.

Two overriding reasons lead to this conclusion. They are the central importance of new knowledge on which to base technological advances, and enlarging the pipeline of well-prepared young people who can discover and use that new knowledge. In the next decade, we will face a severe shortage of well-trained scientists in the chemical area. By the mid-nineties, we will be graduating only about 1,250 U.S. born Ph.D.'s in chemistry. This is about the same as West Germany will graduate at that time. In view of the massive retirements of post-Sputnik scientists in the next decade, the U.S. will fall far short of supplying its need for scientists. We have already witnessed a shortage of qualified applicants for faculty positions in chemistry in Ph.D. granting institutions. This shortage is growing and spreading. Some predict that by the year 2000, there will be liberal arts colleges which will stop teaching chemistry and physics due to the lack of qualified faculty.

It is no longer surprising to state that the United States will compete seriously in trade and will have a satisfactory quality of life only if, among other things, we maintain strong support of research, greatly improve the attracting of bright young people to careers in science, engineering, and mathematics, and assure the high quality of such preparation.

As to new knowledge, here, briefly, are some examples of the research opportunities in science and engineering which must be seized if the U.S. is to stay ahead or abreast of competitor nations. Some of these examples have been in the news, but others may surprise you. It takes years to achieve these accomplishments. Superconductivity, at temperatures high enough to open many exciting possibilities, depends on advanced chemical knowledge. That knowledge is needed for gaining understanding toward further increases in critical temperature (below which these materials are superconducting) and toward producing them economically.

Biotechnology, often referred to as genetic engineering, is done mostly by biochemists and biochemical engineers. They study the behavior of the genetic molecules known as DNA. Their work involves discovery and the use of chemical understanding to cause plants, microbes, etc. to make products which will enhance agriculture, cure disease, and even catalyze industrial processes.

Chemists are exploring an extraordinarily attractive possibility: using sunlight photochemically to produce hydrogen from water. Hydrogen is the cleanest of all fuels, having no greenhouse effect whatsoever. This exploration requires enlarged knowledge of photochemistry and chemical catalysis.

Because improved conservation of energy is fast becoming essential to our economy, and because combustion is still our energy mainstay, we must expand our knowledge and understanding of combustion, so as to use it more effectively. It is a complex set of very rapid chemical processes, which are still not fully understood.

Other promising frontiers of research are shown in summaries of reports from the National Academies: "Frontiers in Chemical Engineering" (1988) and "Opportunities in Chemistry" (1985).

We have a specific concern with one detail of the NSF budget request. It appears to de-emphasize bioprocess engineering, an essential area in biotechnology. That would forego some important opportunities to maintain U.S. leadership. (The former Chemical, Biochemical, and Thermal Engineering Division of the Engineering Directorate has been changed to "Chemical and Thermal Systems." Bioprocess engineering does not appear in the Division of Biological and Critical Systems, its logical home). Given the economic and societal importance of biotechnology, this deserves attention.

Turning to the supply of competent scientists, we read much about and are beginning to experience the worsening shortfall in numbers of bright young people who are capable of, and opting for, careers in mathematics, science and engineering.

A disaster threatens. Coming needs for well prepared people, in the laboratories which must carry out the research on which the nation's future will rely, number far beyond the count of young people who will be emerging from the pipeline when needed.

It takes, at the very least, a dozen years to attract and prepare a young scientist or engineer.

The NSF's education program encompasses a well-planned range of attacks on the problem:

- Preparing teachers to catch the imagination of bright youngsters and start some of them on roads to rewarding careers in science and engineering.

- Reinforcing with television programs, museum exhibits and modernizing of curricula.

- Enabling undergraduate students and even high school students to get experience in real-world research.

- Enabling college faculty to strengthen their teaching by doing cutting-edge research.

- Enabling outstanding graduate students to complete advanced training.

- Attracting minorities, women, and disabled students, and enabling them to move into careers in science and engineering. These are largely untapped pools of talent.

NSF's research program makes a related attack on the problem. University research depends on faculty-guided efforts by graduate student and postdoctoral associates. In turn, these young people are experiencing the best possible training in the many areas of science and engineering which will be crucial to the economic health and quality of life in all parts of the United States.

SUMMARY

The Council for Chemical Research draws attention to the nation's and localities' close dependence on research in science and engineering, and related education from early school years to postdoctoral training. This dependence is central to (1) state of the economy, (2) national security, (3) quality of life, and (4) the maintenance of our environment.

We recognize the threats to U.S. competitiveness, economy and environment.

We recognize the long lead times involved in preparing scientists and engineers, and in achieving the benefits of science and engineering.

Science and engineering alone cannot solve or avoid the problems, but they comprise an absolutely essential part of the solution.

With these things in mind, we urge most seriously that the Congress allow at least the full FY 1990 budget requests for the National Science Foundation's research ($1.803 billion) and education ($190 million) programs.

In order to avoid the loss of U.S. leadership in biotechnology, we also urge review of NSF's apparent de-emphasis on bioprocess engineering.

Madam Chair and Members of the Subcommittee, on behalf of the Council for Chemical Research and myself, I thank you sincerely for the opportunity to present to you these views.

MULTISTEP MATHEMATICS

Senator KERREY. That was fast. [Laughter.]

Let me just ask the panel and any of you can pick it up, the National Assessment of Education Performance came out not too long ago, where they identified something that's been identified by other people as well.

Only 6 percent of our high school graduates have the capacity to do multistep mathematics. Beginning with 6 percent of the students coming into your chemistry class at the University of Minnesota with the capacity to do multistep mathematics, what sort of chance do we have of reversing a relative decline with other industrial nations?

Dr. GASSMAN. Frankly, we're in terrible shape. Other nations are doing things that we're not. They're tooling up at a rate that we're not.

The president of the Japanese Chemical Society recently stated that the 20th century was the century of American chemistry. The 21st century will be the century of Japanese chemistry.

That's a pretty brazen public statement. Our problems are very serious. We know what the pipeline looks like for the year 2000. We can't change that, at least I don't think we can change it.

We need to start doing things to change that very shortly after the year 2000, or I think there will not be a recovery.

The people coming in, some of them are well-prepared, some are not. We do need to get very heavily involved in educating at the grade school level, at the junior high level, because, once again, through the junior high level, we basically lost them for science, at least for advanced degree science.

Dr. **Callis**. Could I comment on that?

The American Chemical Society has worked with the National Science Foundation to develop a curriculum for high school students to interest them more in science and technology.

This is called chemistry in the community.

We are also trying to raise some private funds to train teachers to teach a more related course in the high school in that regard.

PROBLEM OF QUALITY OF TEACHING

This can be done as soon as we get funds. The problem is the quality of the teaching.

Senator **Kerrey**. I can get all excited about making America competitive and, therefore, want to spend more money on science. But, it seems to me that that's going to be a pretty tough sell to an eighth grader, that they ought to be interested in science to make America more competitive in the 21st century, is it not?

Dr. **Gassman**. I don't think you can sell it that way.

Senator **Kerrey**. I hope not.

Dr. **Gassman**. Science is exciting.

Dr. **Callis**. You can't tell them it's competitive.

Dr. **Gassman**. We had tremendous problems with the people who are teaching science. I have seven children and not one of them had a decent science teacher. They have gone to good schools.

Senator **Kerrey**. They haven't gone to the University of Minnesota?

Dr. **Gassman**. One did, but I'm talking about at the high schools and grade school level.

Dr. **Dybbs**. Mr. Chairman, the problem you are talking about is a complex problem. The youth of today, what motivates them? Some of our best would rather be lawyers if we don't get them and create the excitement and the enthusiasm that we could.

This goes beyond providing resources to do it because there are competent teachers. We have to excite the quality students. We have to motivate them to work in these areas. And I think that is the key. If we can find a way to do that, it's not going to take necessarily a lot of additional money, but it's going to take additional motivation by the people that are teaching the students and by the professional societies to create the fact that this is a profession worthy of doing.

I think, in our society, science and engineering traditionally has not been a glamor profession. It's been others. This is part and parcel of the problem. It's a very complex problem that goes far beyond this committee.

I think, from our standpoint, these are important issues. The facilities issue is an important issue, the research issue is important. We have to address all of them.

There's a need to have a coordinated effort which point of view we need.

Dr. GASSMAN. There are those who believe that by the year 2000 we'll stop teaching chemistry and physics in many of the graduate schools from lack of faculty.

Senator KERREY. May I just say in closing to all of you—I'll give you an opportunity to respond—there are some young people who would applaud that. [Laughter.]

They've been put to sleep in the classrooms by the current crop.

Dr. GASSMAN. I hope you're not one of them.

Senator KERREY. No; I'm not.

Thank you.

PANEL NO. 3

The third panel is Dr. Howard Schachman, Dr. David Johnson, Dr. Robert Dooling, and Dr. Howard Silver.

STATEMENT OF DR. HOWARD SCHACHMAN, FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

Dr. SCHACHMAN. Thank you, Mr. Chairman. I appreciate this opportunity to come before you. I thank you also for your support in the subcommittee with your previous appropriations bill.

I'm here basically to represent the Federation of American Societies for Experimental Biology, a group of 30,000 members which includes among its past, present, and deceased 114 Nobel lawyers.

BIOLOGICAL AND MEDICAL RESEARCH

We're here to speak for the support of biological and medical research nominally sponsored by the National Science Foundation. But also NASA, NIH, and also the Environmental Protection Agency.

We've heard a lot of discussions worrying about competitiveness, training, and basic research. In large measure, while as a professor of molecular biology at the University of California at Berkeley, I can wear a third hat because I have been a grantee, and I still am a grantee of the National Science Foundation, since its inception.

So I've seen the National Science Foundation work. I've been on top advisory committees for it and it can justify its wonderful existence as a national treasure in terms of training students, producing fundamental research, and stirring up the whole biotechnology industry of America.

We've heard a lot of discussion about competitiveness. You can rest assured that we would not have this industry had it not been for the basic research sponsored both by NSF and by NIH.

We didn't know what we were doing except we were doing wonderful research with enzymes and, all of a sudden, we learned how to manipulate DNA in little pieces. We've now got this incredible development in which the United States is in the forefront, and I want to be sure it remains in the forefront.

In my lifetime, I've been blessed with 58 graduate students who have gotten Ph.D.'s. Coming from the small schools you have heard about earlier, these are fantastically well-trained individuals who've been inspired to go on to graduate careers.

I want to make sure that continues. Not only are we turning up research in our universities sponsored by NSF, but we're training individuals who have gone on to become professors at other universities.

I just hope that my written statement will convey the enthusiasm I feel for the support you've been granting in the past to these medical research programs.

I'll cut my statement short by thanking you very much for your attention.

Senator **KERREY**. Thank you.

[The statement follows:]

STATEMENT OF DR. HOWARD K. SCHACHMAN

Madam Chair:

My name is Howard Schachman and I am Professor of Molecular Biology at the University of California at Berkeley. I am also President of the Federation of American Societies for Experimental Biology. I am testifying today in support of biological and medical research programs funded by the National Science Foundation, the Department of Veterans' Affairs, the National Aeronautics and Space Administration, and the Environmental Protection Agency. While these are separate and distinct programs in your bill, they may also be viewed collectively as part of the nation's effort to overcome disease through research.

I represent the 30,000 members of the seven Societies that comprise the Federation of American Societies for Experimental Biology. The Federation is a nonprofit organization whose purpose is to disseminate new knowledge in the life sciences through its meetings, publications, and programs.

I want to emphasize to you the vital importance of basic research. The goal of basic research is to expand what we do know to give us a better shot at solving problems. But if there is one thing predictable about the life sciences, it is their unpredictable nature. We rarely manage to plan a program that will lead us to a desired solution within a predetermined time. Significant advances, when they occur, are generally the result of someone looking at discoveries from a new perspective and then applying their results to the resolution of a problem. In fact, many of our most significant advances began with research that was not designed to resolve a particular problem but was supported because it promised to fill a gap in our knowledge.

Basic research is how we lay the groundwork to get to our goal, namely, improved health for all. We need a broad platform of basic research to help us solve not only the problems we recognize today, but also the new challenges to life on this increasingly endangered planet.

Each agency within your purview has its own mission, its own research responsibilities. For this reason, it is vital that your committee provide the maximum support possible for life sciences research. It provides no benefit in the long run to take funds from life science research at one agency to fund research at another.

NATIONAL SCIENCE FOUNDATION: Recognizing the importance of basic research to our nation, both Congress and the Administration have endorsed a doubling of the Foundation's budget between FYs 1989 and 1993. Last year Congress overwhelmingly authorized that doubling, and President Bush supported it in his State of the Union address. But despite lofty rhetoric, the Administration's request falls short of the amount needed to smoothly achieve the 1993 level. In FY 1990 NSF would require a 20% increase, or $378 million more than the current year. Unfortunately, the Administration requested an increase of only $264 million.

More specifically, the Federation supports a FY 1990 appropriation of $1.9 billion for Research and Related Activities, which is the authorized level, rather than the $1.8 billion requested by the Administration. We believe the additional $100 million could be well spent on important areas of research that are not presently slated to receive adequate increases.

The Federation is concerned by the small increases requested for key life sciences programs. The average increase requested for disciplinary research in NSF overall was 11%. The Administration proposed almost that much — a 10.3% increase — for Molecular Biosciences in the Biological and Behavioral Sciences Directorate. However, only a 9% increase was proposed for Cellular Biosciences, which includes Cellular Biochemistry, Developmental Biology and Physiological Processes, and is also housed in that directorate. There are exciting scientific challenges in these latter areas, where scientists are studying how physiological processes work even at the molecular and cellular level. Improving instrumentation in all the biological sciences is also an important goal, and the Federation is pleased that NSF intends to provide support for this purpose. It is worth pointing out that some research on the chemistry of life processes is also being funded through the Chemistry Division of the Mathematics and Physical Sciences Directorate, and we hope that you will bear this in mind when you are making funding decisions.

A word on funding mechanisms: Investigator-initiated grants are the driving force behind life sciences research, and the Federation believes that these grants deserve the highest priority in research funding.

For NSF's Science and Engineering Education (SEE) Directorate, the authorized level is $205 million, or $15 million more than the Administration's request. The Federation recognizes the importance of improving pre-college science education and finding ways to get students interested in the sciences. Many reports have shown the woeful state of science education in American schools and declining numbers of U.S.-educated investigators. This is an urgent matter that needs to be addressed because those pre-college students are our future scientists. However, the increase requested by the Administration for Teacher Preparation and Enhancement was only 7.8%, Or $5 million. The Federation believes that precollege programs deserve more emphasis and should receive larger increases.

DEPARTMENT OF VETERAN'S AFFAIRS MEDICAL RESEARCH: The Administration proposed an unacceptable 6.2 percent reduction for Medical and Prosthetic Research within the Department of Veterans' Affairs. This program funds medical research into the diagnosis and treatment of a broad range of diseases of particular relevance to veterans. The list is lengthy and includes heart attack, stroke, hypertension, circulatory disorders, cancer, lung diseases, immune system disorders, Alzheimer's, other medical problems of the elderly, drug and alcohol dependence, spinal cord and head injuries, and neurological disorders such as epilepsy and Parkinson's. As you can tell, these are not problems that affect veterans exclusively by any means, and discoveries made by VA researchers benefit everyone. This research is an important adjunct to that carried out elsewhere in the federal government.

The Administration proposes that VA spend only $197 million for Medical and Prosthetic Research in FY 1990 compared with a FY 1989 appropriation of $210 million. Also, for the past several years, this program has suffered from severely constrained budgets. Medical Research, which is the largest component of that account, received only $179 million in FY 1989. The Federation agrees with the recommendations of VA supporters that this program be restored to the more robust level of effort it was able to make in FY 1985. With a FY 1990 appropriation of $215 million, the VA Medical Research program will be able to fund more meritorious grants approved by scientific review panels and will improve its abiility to recruit and retain qualified medical researchers.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION: The FY 1990 budget requests $124.2 million for Life Sciences Research at NASA, in an effort to overcome the effects of the drastic cut made in the FY 1989 appropriation. The increase is greatly needed. This program has two major goals: First, to study the origin, evolution, and adaptation of all life forms; and second, to provide a scientific and technological foundation for the development of medical and biological systems that will make possible human exploration and habitation of space. Some of the research funded through this program is performed in space, and some is carried out in laboratories simulating the conditions of space flight. In June 1990, the space shuttle's space lab is scheduled to carry "SLS I" — "Space Life Sciences I" — the first Space Lab dedicated entirely to Life Sciences Research. The Federation urges Congress to accept the Administration's proposal for NASA Life Sciences Research.

It is important to note here that the Space Station initiative would provide a platform for much crucial biomedical experimentation in the absence of gravity. The Space Station would permit us not only to support space exploration, but also address major human health problems here on earth, such as osteoporosis and cardiovascular disease. If, for some unfortunate reason, it were to become necessary to delay funding for the Space Station, it is vital that the basic biomedical research underway in the Office of Life Sciences should continue to be funded. Of special interest to the nation's biological and medical community are the many programs endorsed by the National Academy of Sciences and the Robbins Committee, such as (a) the SCORE program, which provides for faculty appointments in space biology and medicine at major universities, (b) the Extended Duration Orbiter, (c) the LifeSat program, which provides for a series of reusable reentry satellites for basic biological studies, and (d) the CELSS (Closed Ecological Life Support System) program which is developing regenerative long-term, life-support systems.

ENVIRONMENTAL PROTECTION AGENCY: The EPA has several small research programs involving various applications of biotechnology products, that is, genetically engineered organisms. The EPA is responsible for reviewing the safety of using such organisms as natural pesticides. The EPA is also studying how microbes might convert toxic wastes into harmless substances. About 10 years ago, a microbe was developed that was able to biodegrade oil, which sparked a landmark 1980 Supreme Court Ruling and opened the way to the patenting of genetically engineered organisms. At a time when we are all concerned about the destructive effects of oil spills and toxic wastes on the environment, the Federation urges strong support for the EPA's biosystems concept and Superfund innovative technology evaluation program, which seek to develop and apply biotechnology to problems of environmental cleanup.

This concludes my remarks. I will be pleased to answer any questions.

PREPARING FOR RETURN TO PROSPERITY

STATEMENT OF DR. DAVID JOHNSON, FEDERATION OF BEHAVIORAL, PSYCHOLOGICAL, AND COGNITIVE SCIENCES

Senator KERREY. Next will be Dr. Johnson.

Dr. JOHNSON. Mr. Chairman, the scarcity of Government forces us to set priorities, if the goal is to return to prosperity, it's often a mistake to focus resources only on current needs; without preparation for a return to prosperity, there may be no return.

Economic growth is the best way to restore prosperity, but the economy relies on innovation, growth in basic scientific research as the root of innovation both in products and processes, including human processes.

In 1981, Congress and the administration decided insufficient support impaired national defense. The largest peacetime buildup in our history followed; recognizing the causal relation between science and economic advance, the administration seeks a similar but smaller-scaled decision in science.

The President asks that basic research receive high priority and that the NSF receive a $2.149 billion appropriation for fiscal year 1990.

We ask you to recognize the motivation of the necessity behind this requested level. More than that, we ask you to recognize the necessity to return science to the health that made it such a force in our past economic growth.

Now, as there appears to be a new focus on science and its contributions to society, it is disturbing that the behavioral sciences continue to be least well-supported. The very sciences that deal most directly with the range of human activity continue to receive the most meager support while, under the President's request, NSF would grow by 14 percent, the behavioral, neural, social, and economic sciences would grow by just 7.6 percent.

Lean funding has damaged behavioral science. Here are two indicators:

An NIMH study shows that the age of grant applicants is rising. Most of that rise is due to a rise in the age of behavioral scientists. Another recent study in this case of publication rates in journals that commonly publish research involving the use of animals shows an 18-percent decline in publications by U.S. scientists.

Again, psychologists make up a substantial part of that decline. While these changes have several causes, the discouragement of young scientists in not finding research support must be counted as a significant factor. Behavioral research has been an invaluable tool for the development of solutions to many of society's problems.

We ask that the subcommittee support at least the level of growth of behavioral and social sciences requested by the President and to consider all practical means for further strengthening research as well as expanding opportunities for graduate level training of researchers in these sciences.

I thank you for this opportunity to express our views.

Senator **KERREY**. Thank you.

[The statement follows:]

STATEMENT OF DR. DAVID JOHNSON

Executive Director
The Federation of Behavioral, Psychological and Cognitive Sciences

Madam Chairwoman, members of the Subcommittee, my name is David Johnson. I am Executive Director of the Federation of Behavioral, Psychological and Cognitive Sciences. The Federation is made up of 15 scientific societies and approximately 125 university departments and research centers. We represent more than 20,000 scientists engaged in behavioral research. I am here today to offer our views on the fiscal year 1990 appropriation request for the National Science Foundation.

In times of prosperity, it is relatively easy to satisfy a host of needs. But when needs outstrip the means of satisfaction, it is necessary to establish priorities. It has been some time since the federal government last experienced prosperity sufficient to meet all needs. A temptation during times of scarcity is to make the meeting of current needs not just a priority but the exclusive priority. If the goal is to return to a state of prosperity, however, it is often a mistake to focus resources only on current needs. If preparation is not made for a return to prosperity, there may be no return. Growth in the economy is the most robust way to restore prosperity to government. But the economy relies on innovation for growth. And basic scientific research is the root of innovation both in products and processes including human processes. That is why, despite pressures to the contrary, the federal government should give strong support to science during periods of federal revenue shortfall.

To its credit, the Administration has recognized the causal relationship between science and economic advance. The President has asked that basic research be given very high priority in the fiscal 1990 appropriation. He has asked that the National Science Foundation receive authority to obligate $2, 149,022,000 for expenditure in FY90. If comparable growth were to be sustained through FY93, it might yet be possible to achieve the doubling of the NSF budget proposed two years ago and embodied in the multi-year authorization approved last year by the Congress. We believe that the Administration has made a choice that is in the best interest of the nation, and we urge the Congress to approve the Administration's request.

We recognize that because of the agencies included in the Subcommittee jurisdiction you will be compelled to make choices among largely non-comparable programs. Should you support shelter for the homeless, services for veterans, or science? It is a difficult choice. Each is an extremely worthy cause. Last year, a decision was made late in the appropriation cycle to pare back the NSF appropriation from the requested level and to distribute some of those funds to other areas under the Subcommittee's jurisdiction.

The Veterans Administration and the Housing and Urban Development budgets are each ten times the size of the NSF budget. Last year, $45 million were removed from the NSF request and distributed to other programs. Spread over two $20 billion agencies, that amount was a relatively small transfer. But taken from an agency of less than $2 billion, it was a reduction that caused substantial revision of planned programs. The major new initiative of FY89, the Science and Technology Centers program, for example, was reduced to about half its originally envisioned size. So many excellent proposals could not be funded that NSF took it on itself to attempt to convince state governments to consider funding some of the best proposals. Nevertheless, science that should have been done, science that would have been of benefit to the nation, will not be done because of the FY89 reduction from requested levels.

In addition to slowing the pace of scientific discovery, the FY89-funding level may have retarded development of the scientific infrastructure. If one looks out over the whole of science to try to determine which areas are advancing most rapidly now, it appears that one marker of scientific vitality is the need to collaborate. That is, those areas where the greatest advances are taking place are also areas where the usefulness of paradigms and techniques of a single, isolated subdiscipline is quickly being exhausted. Scientists in these areas find that they need to cross over into other subdisciplines or to work with scientists from other areas in order to make further advances. For many areas of science, this is a fundamental but essential change in operating procedure. The Centers initiative is a deliberate attempt on the part of NSF to help the most robust areas of science progress at the most rapid pace possible. For many disciplines ripe for advance, the opportunity to take advantage of the centers structure as a means to accelerate progress will have to be postponed.

At the beginning of the 1980s, the Administration and the Congress made a basic decision that the defense of the country was being seriously impaired by several years of declining support for the Department of Defense. As a result of that decision, the largest peacetime buildup of military preparedness in our history occurred. The Administration is asking the Congress to agree to a similar, though much smaller scale, fundamental decision in science.

Years of flat, and, in some cases, steeply declining budgets have made it difficult for scientists to gain support for basic research. Students have been discouraged from seeking scientific careers. The quality of scientific, mathematical and engineering education has declined. And the percentage of minorities entering science has not improved markedly in twenty years even though this segment of the population is the most rapidly growing. All of these are signs of weakening in our scientific preparedness, a weakening the Administration proposes to correct through several years of substantial growth in the basic research and science education budgets. We ask the members of the Subcommittee to recognize the motivation and the necessity behind the requested level of funding for the National Science Foundation. More than that, we ask the Subcommittee to join the Administration in its attempt to return the scientific enterprise to the level of health that has made it such a significant force in economic growth throughout our history.

It is a matter of particular frustration that those sciences having directly to do with human behavior beyond the cellular level have been among the least well supported sciences in recent years. It is well known to this Subcommittee that the behavioral sciences have taken nearly ten years to recover a level of support comparable to that which they enjoyed prior to the 1980s. Now, as there appears to be renewed focus on science and its ability to contribute to society, the very sciences that deal most directly with the range of human activity are the ones that continue to receive the most meager support. While under the present request, NSF as a whole would grow in funding by 14%, the Biological, Behavioral and Social Science Directorate would grow by 11% overall, and the behavioral, neural, social and economic sciences would grow by just 7.6%.

I believe multiple years of relatively lean funding have taken a serious toll on the behavioral sciences. Let me cite two possible indicators of that toll. A recent study of grant applicants at the National Institute of Mental Health showed that the age of grant applicants is rising. A closer look at the data shows that most of that rise in age is accounted for by a rise in the age of psychologists. Another recent study, in this case of publication rates in journals that commonly publish research involving the use of animals, shows an 18% decline in publications by U.S. scientists. Again, psychologists make up a substantial part of that decline. While each of these declines surely has several causes, the discouragement of young scientists at not being able to find support for their work must be counted as a significant factor.

This hesitation to support research on human behavior as strongly as the physical sciences are supported is an interesting phenomenon that is not restricted to the National Science Foundation. If, for example, behavioral research had been the first emphasis in the effort to stem AIDS, thousands of lives might have been saved. Instead the emphasis from the first has been on finding a cure. There are few researchers who believe a cure will be found for at least ten years. In the mean time, more than a million Americans may have become HIV positive. The Defense Department spends less than 2% of its research budget on training research even though the increasing sophistication of weapons systems together with the increasing difficulty in recruiting sufficient numbers of educationally qualified soldiers is damaging our defense capability. The implements of defense, regardless of their sophistication, are useless or unintentionally deadly in the hands of those who do not know how or when to use them. They are equally useless when soldiers do not know how to repair them. The declining performance of U.S. students when compared with students from other countries is a source of deep concern to parents, to government officials and to leaders of the business world. The Congress is to be congratulated for its efforts to rebuild the quality of science, mathematics and engineering education through the NSF Science and Engineering Directorate. But the Department of Education's Office of Research spends only about $50 million for research on all other areas of educational research even though it is clear that before students can learn science they must first be able to read. Before they can understand higher order mathematics, they must be able to add, subtract, multiply and divide. And before they can participate meaningfully in American society and the American workplace they need to know how to reason, how to use what they know to solve problems.

The list of areas where behavioral research has the potential to make significant contributions if there is sufficient support for such research includes many of the major problems of our time. We may understand the contributors to the greenhouse effect, but do we know how to convince whole populations and their governments that tropical deforestation is not in their best interest or that alternatives to fossil fuel powered transportation should be used at every possible opportunity? Drugs and alcohol abuse are sapping the vitality of the nation. We do not know enough about how to make drug use unattractive to potential abusers. Teenage pregnancy rates are alarmingly high. How can children be convinced not to conceive babies? There are thousands of homeless people on our streets whose mental disabilities make it appear that they will never be able to reenter working society. Can something be done to restore some dignity to these people's lives? These are the things Americans worry about, the things policy makers worry about. Admitedly, they are controversial issues. They are all behavioral issues. They are all issues whose negative impact on society could be alleviated if enough were known to point the way toward effective and humane interventions. But in the absence of solid grounding in research, many millions of dollars are spent on intervention programs that just do not work. Increased support for behavioral research is an economical investment when the alternative is seriously considered.

Despite the prolonged period of inadequate funding, behavioral science has made a number of important breakthroughs. Research on acquisition of scientific concepts and mathematical reasoning, for example, has greatly clarified the process by which the brain obtains and organizes such information. The research indicates that some accepted classroom practices may be working against rather than reinforcing the human cognitive system's preferred learning process. Applications of this research could greatly enhance learning and retention of scientific and mathematical concepts. Research on the ability of child and adult eyewitnesses to recall important facts about a crime and its perpetrator indicate that recall is much easier to alter by intervening events than had been thought. The research has profound implications for our legal system and for courtroom practices. There have been great advances in our general knowledge of human memory organization and structure. The role of meaning in the formation of memory is much better understood. These advances in memory research are being used to improve the speed and effectiveness of programs to train individuals for high performance occupations such as air traffic control. Research on human perception is producing a much richer understanding of how our senses give us information about our environment. Applications of this research are wide-ranging. They vary all the way from development of techniques to control cancer anorexia in patients undergoing chemotherapy for cancer, to development of safer instrument displays in passenger planes and military aircraft.

We believe that behavioral research has much to offer the citizens of this country. It has been, and can continue to be, a valuable tool for development of solutions to many of society's most troublesome problems. We ask the Subcommittee to support at least the level of growth for the behavioral and social sciences requested by the President, and to consider all practical means for further strengthening research as well as expanding opportunities for graduate level training of researchers in these sciences. I thank you for this opportunity to express views from the behavioral research community.

STATEMENT OF DR. ROBERT J. DOOLING, AMERICAN PSYCHOLOGICAL ASSOCIATION

Senator **Kerrey**. Dr. Dooling.

Dr. **Dooling**. Thank you, Mr. Chairman. I'm Robert Dooling, a professor of psychology at the University of Maryland, College Park. I've been engaged in basic behavioral research supported by the National Science Foundation.

I'm also a member of the American Psychological Association, which represents the concerns of more than 90,000 psychologists across the country.

On behalf of the APA, I would like to endorse the administration's proposal to increase NSF's budget by 14 percent in fiscal year 1990, and to double the NSF budget by 1993.

We appreciate your past support for basic research and urge you to continue to approve the public resources needed to rebuild our scientific base.

REBUILDING OUR SCIENTIFIC BASE

Basic research in behavioral and social sciences is essential in addressing the crucial concerns of our Nation. The 1988 report of the National Academy of Sciences highlighted some of the more critical areas of behavioral research and recommended a new national commitment to the behavioral and social sciences.

This report also recommended that the Federal investment in behavioral and social sciences be increased by $240 million annually, $60 million of this explicitly designated for NSF.

Last March, the House Subcommittee on Science, Research, and Technology also examined the dangers of declining support within NSF for behavioral and social sciences.

Recently, a coalition of 19 behavioral and social science organizations has produced a specific action plan for behavioral research derived from these 1988 NAS recommendations.

I can summarize these. The coalition's plan also recommends that NSF devote a total of $67 million to behavioral and social science programs over and above the fiscal year 1990 budget.

This is an amount that is within the authorized increase for research and related activities budget categories.

Needless to say, the advances driven by this support would occur in the areas of this Nation's most intractable problems: Drug abuse, improving education at all levels, and increasing worker productivity and organizational effectiveness.

I must stress that without an understanding of the natural laws that govern human behavior and allow us to change behavior, we will not be able to effectively pursue many of our most urgent national goals.

CHEMICAL SUBSTANCE ABUSE

The APA is also greatly concerned about the current proposed level of funding for EPA. Exposure to certain chemical substances can result in severe adverse effects in a wide range of behaviors and, in some cases, death.

Another recent NAS study in 1984 determined that there are more than 65,000 chemicals in use in the United States today to which people are exposed. Roughly, 1,500 of these substances are introduced annually.

Very few of these are tested for adverse effect on the nervous system. For over 80 percent of the chemicals in interstate commerce there are no toxicity data available.

EPA must have a scientific data base upon which to make informed decisions of toxic substances.

APA believes that the two EPA research programs—the Health Effects Research Laboratory and the Exploratory Research Grants Program—are grossly underfunded. There's been no growth in funding since 1982 for AGRL. APA recommends increasing the budget from the $45 million in fiscal year 1989 and to $60 million in fiscal year 1990.

APA recommends at least $35 million for PRG to restore a level of funding in real terms to that program that existed in fiscal year 1981.

In closing, it's useful to mention the cost of not conducting adequate health effects and toxicity research. For instance, on pesticides, in 1987, EPA paid approximately $30 million in indemnities from the Herbicide 245T and Silvex.

Compare this cost to the fact that the long-range extramural health research budget of the agency is only $2 million in 1989.

Mr. Chairman, thank you.

[The statement follows:]

STATEMENT OF DR. ROBERT J. DOOLING

Mr. Chairman and Members of the Subcommittee, I am Dr. Robert J. Dooling, Professor of Psychology at the University of Maryland in College Park, MD, and member of the American Psychological Association (APA).

On behalf of APA — which represents the concerns of more than 90,000 psychologists, including many who conduct important NSF-supported research — I appreciate this opportunity to present testimony on Fiscal Year 1990 appropriations for the National Science Foundation (NSF) and the Environmental Protection Agency (EPA).

NSF FISCAL YEAR 1990 APPROPRIATION

APA strongly endorses the Administration's proposal to increase NSF's budget by 14% for FY 1990 to a total of $2.15 billion. Moreover, we applaud the President and NSF Director Erich Bloch for their foresight in proposing a doubling of the NSF budget over the next five years to $3.24 billion in FY 1993. These proposed increases signify a commitment by this Administration to invest in basic scientific research as part of this nation's goal to become more competitive internationally. We appreciate the Subcommittee's support for basic scientific research, which provides the requisite foundation for improving economic growth, productivity, and competitiveness. We urge your committee to approve the public resources needed to rebuild our scientific base and to ensure ongoing support for innovative basic scientific research.

BEHAVIORAL AND SOCIAL SCIENCES

There are many important contributions to be made by the behavioral and social sciences in addressing the critical concerns of our nation. An excellent review of some of the research areas showing great promise to serve national goals is contained in the extensive 1988 report of the National Academy of Sciences (NAS). This report, The Behavioral and Social Sciences: Achievements and Opportunities, recommends a "new national commitment to the behavioral and social sciences" and that the federal investment in the behavioral and social sciences be increased by $240 million annually to capitalize on the wide-ranging opportunities for scientific advances. Of this, some $60 million was designated for NSF.

The advances driven by this support would utimately be applied to many of this nation's most intractable problems — discouraging and treating drug abuse, improving education at all levels, and increasing worker productivity and organizational effectiveness. Translating basic science findings in the behavioral and social sciences into practical real-world applications often does not involve the tremendous hurdles that typify technology transfer efforts in other sciences. In fact, behavioral and social science findings often spread quickly through society and lead to effective and practical developments in government policy, industrial management, educational practices, and elsewhere. To mention but one example, basic findings as to why individuals make different educational and career choices have direct bearing on attempts to increase math and science enrollments of women and minorities.

The validity of these statements and the importance of behavioral science research has already been recognized by the House of Representatives in hearings held in March by the Subcommittee on Science, Research and Technology -- the committee responsible for authorizing NSF. The Subcommittee examined the dangerously declining support levels within NSF for the behavioral and social science disciplines.

There are many important competing opportunities that the Appropriations Committee will be considering in this year of an ever-more restrictive fiscal environment. Yet, a failure to sustain the behavioral and social sciences at even the minimal levels being requested in the proposed budget will result in a serious national deficit in terms of the scientific knowledge and human resource base contributed by these disciplines, which have been identified as so critical to our national goals. A coalition of 19 behavioral and social science organization supports these statements and has a specific action plan derived from the NAS recommendations that I will gladly submit for the hearing record.

APA supports the requested $314.5 million for the Biological, Behavioral and Social Sciences (BBS) portion of the NSF budget proposal, but cautions that a failure to fulfill even minimal proposed increases (ranging from 7.5% to 7.7%) in the Behavioral and Neural Sciences and the Social and Economic Sciences Divisions of BBS will seriously undermine the accomplishment of national goals such as those highlighted above. Such increases are conspicuously lower than the 14% increase requested for NSF overall and would continue a decade-long real decline of over 30%, measured in constant dollars, for the behavioral and social science programs of NSF.

Based on the NAS recommendations, APA recommends that NSF devote a total of $67 million to these programs (including NSF-wide educational programs that fund behavioral and social scientists) over-and-above the FY 1990 budget proposal. The $67 million should be allotted as follows: $30 million to individual investigator research; $9 million to predoctoral fellowships and training grants; $5 million to postdoctoral fellowships (institutional and individual) and training grants; $4 million to pre-college and college education; $11 million to instrumentation and computers; $4 million to skills enhancement and training (e.g., advanced training institutes); and $4 million for travel grants.

Technical and scientific advances in areas other than the behavioral and social disciplines represent only half of the equation toward increased international competitiveness. While we have made outstanding progress in such fields as biology, physics, chemistry, and computer sciences as well as in associated technologies, our nation cannot prudently postpone the necessary advances that can come from the behavioral and social disciplines, as they provide the knowledge and means for accomplishing critical national goals. Without the understanding of the natural laws that govern human behavior and allow us to change behavior, we will not be able to develop or apply the means to address such problems as drug addiction and abuse, crime, declines in employee motivation and productivity and organizational effectiveness, and inadequate educational practices.

In fact, disproportionate advances in sciences other than behavioral science has increased our vulnerability to behavioral problems. The biomedical, engineering, computer, and communications advances that improve our comfort, standard of living, and longevity also serve to encourage our social isolation from each other, increase our ease of access to inexpensive guns and potent drugs, increase our suspicions and fears about the control of these technologies over our lives and encouraging irrational resistance to the implementation of other technologies such as computers, and increase the level of devastation wrought by "errors in judgment" or poor "self-control" by decision-makers in transportation (aviation, oil-tanker, and train accidents) and energy (e.g., nuclear reactor management).

Our nation is clearly at a critical juncture in scientific, technological, and social development and must devote adequate levels of resources to all these areas in order to preserve and maintain a livable world.

EPA FY 1990 APPROPRIATIONS

I turn my comments now to the proposed FY 1990 budget of the EPA. APA is greatly concerned about current and proposed levels of federal funding for the intra- and extramural research activities at EPA given the magnitude of the environmental problems confronting our nation. Although we are particularly concerned about the adverse behavioral and neurological effects of chemical substances, our testimony today extends broadly to health research at EPA. In particular, we believe that EPA's Health Effects Research Laboratory and the Exploratory Research Grants Program are grossly underfunded.

BEHAVIORAL AND NEUROLOGICAL TOXICOLOGY

Exposure to chemical substances can result in adverse effects on sensory and motor function, cognitive and intellectual performance, and emotional well-being. In severe cases, some substances can cause paralysis and death. Damage to the human central nervous system is rarely reparable and the economic and social costs to the affected individual and society are vast.

Occupational medicine is replete with dramatic examples of the negative effects of exposure to chemicals in the workplace. For example, the industrial chemical, carbon disulfide, used in rayon manufacturing, can produce disorders of vision and nerve weakness, increases the incidence of suicide, and eventually produces a raging, raving mania. Inorganic mercury, also extensively used in manufacturing, is more subtle, producing social withdrawal, "fidgitiness," and memory impairments. The "Mad Hatter" of Lewis Carroll"s *Alice in Wonderland* was a caricature of this occupational malady.

Another example, lead, has been a concern since Hippocrates first recognized lead toxicity in the mining industry. More recently, the *New England Journal of Medicine* (May, 1987) reported effects of lead in the nervous system of children exposed in-utero to levels believed safe until now. Extensive research reveals that blood levels below the current federal criteria for lead poisoning may justify removal for medical reasons of women of child-bearing age from work environments where lead exposure is likely.

Organic solvents, a particularly toxic class of industrial chemicals due to their high volatility (i.e., when exposed to air they rapidly change from liquids to gases that are then likely to be inhaled), are used in glues, cements, and paints. Inhalation can cause permanent, severe degeneration of nerve cells. A variety of solvents including hydrocarbons, ketones, and various combinations of these have resulted in neurological problems in the occupational setting. A case in point is an instance that occurred in 1973 where workers at a fabric production plant were discovered to be suffering the effects of neuropathy, or degeneration of nerve fibers. Extensive screening of employees revealed dozens had serious neurological problems. Their chronic exposure to methyl-n-butyl ketone, a dye solvent and cleaning agent introduced to the plant the previous year was to blame.

Another case involved BHMH (Lucel-7,) a catalyst used in the manufacture of reinforced bathtubs. At a plant in Lancaster, Texas, the substance had only been used for a few weeks before workers began experiencing a number of neurological symptoms ranging from dizziness and muscle weakness to vision disturbances and memory loss. Animal studies conducted *after* the exposure demonstrated that rats experience adverse affects similar to those seen in humans. It is likely that BHMH would not have been marketed had appropriate tests been conducted *before* its utilization.

THE NEED FOR TOXICITY TESTING AND RESEARCH

Chemicals have become an integral part of our daily lives, and, it should be clear from the examples above that for those exposed to industrial chemicals, the unintended impact of those chemicals can be especially devastating. However, all too frequently, the toxicity of existing and new chemicals is unknown. The National Academy of Sciences (NAS) addressed the need for toxicity testing and research in a 1984 report, *Toxicity Testing: Strategies to Determine Needs and Priorities*. The study determined that there are more than 65,000 chemicals to which humans are likely to be exposed in use in the U.S. and approximately 1,500 new substances are introduced each year. Very few of these (various pesticides, food additives, cosmetic ingredients, drugs, and chemicals in commerce) have been tested for adverse affects on the nervous system. Only 34% of the pesticides reviewed have been tested adequately enough to assess even partially their potential hazard to human health.

The situation regarding chemicals used in industry and commerce is much worse. For 90% of these, approximately 48,000 chemicals, even a partial health-hazard assessment is impossible due to the lack of data from manufacturers. Equally disturbing is that for large numbers of chemicals -- 38% of pesticides and their inert ingredients, and approximately 80% of the chemicals in commerce -- no toxicity data are available. The NAS concluded that "it is clear that thousands or even tens of thousands of chemicals are legitimate candidates for toxicity testing..." and that neurobehavioral toxicity evaluation is one of the highest priority testing needs.

EPA HEALTH EFFECTS RESEARCH

To appropriately assess potentially toxic substances, EPA must have a data base upon which to make informed decisions, based on sound, scientific knowledge. Intra- and extramural research programs need the resources to conduct the long-range research programs necessary to provide this basic knowledge.

APA is greatly concerned about current and proposed levels of federal funding for health effects research at EPA. We believe that the two EPA research programs which fund this type of research, the Health Effects Research Laboratory (HERL) and the Exploratory Research Grants (ERG) Program, are grossly underfunded and receive an inordinately small portion of the total EPA research budget.

HERL's major mission is to provide scientific data to enable EPA to perform risk assessment studies. These risk assessments provide the scientific basis for EPA's regulation of potentially hazardous substances in the environment. Risk assessment studies require a research emphasis on hazard identification, determination of accurate exposure levels, and extrapolations from animal studies in assessing the risk to humans.

There has been no growth in funding since 1982 for HERL's extramural research program. In fact, the total budget for HERL grew in current dollars from $40 million in FY 1982 to only $45 million in FY 1989, representing a decrease, in constant dollars, of 11% over this period. HERL funding for neurobehavioral toxicity research has increased about 13% over this period in real terms, but this increase is calculated on a disturbingly trivial base, growing from a mere $2.8 million in FY 1982 to only $4 million in FY 1989, in current dollars. For FY 1990, the President's budget proposal requests only $50 million for HERL.

The ERG Program has focused principally on long-range problems. However, its funding history reflects a serious erosion. Since 1981 the dollars allocated to this program have declined consistently (Figure 1). From a high of $22 million in FY 1981, funding for the program dropped to an all-time-low of $7.5 million in FY 1989. In fact, if funding for the ERG Program had kept pace with the cost of conducting research, as measured by the Biomedical Research and Development Index, it would have been funded at approximately $65 million in FY 1989, rather than $7.5 million. Only $8.2 million has been requested by the President for FY 1990. Similarly, the health research component of the program would have been funded at approximately $38 million, rather than $2 million. Clearly, there has been a dangerous erosion of research efforts which would help to protect human health from the adverse effects of chemical exposure.

APA recommends a significant expansion of both the HERL and the ERG Program. An authorization and appropriation of at least $35 million for ERG would help to restore a level of funding (in real terms) to this program that existed in FY 1981. Similarly, with regard to HERL, by increasing the budget from $45 million in FY 1989 to at least $60 million in FY 1990, Congress would help restore EPA's ability to fund high quality science.

To put these numbers into perspective, it is useful to highlight the costs of not conducting adequate research on the toxicity of potentially harmful substances. Under the Federal Insecticide, Fungicide and Rodenticide Act, EPA registers pesticides for use after it examines data provided by the manufacturers. After pesticide registration, EPA frequently discovers adverse effects that require suspension of marketing of the material, indicating the inadequacy of the original data and testing techniques used to register the pesticides in the first place. In 1987, EPA paid approximately $30 million in indemnities for the herbicides, 2,4,5-T and silvex. The FY 1987 and FY 1988 costs for storage of these two chemicals and EDB were about $8 million. How many other pesticides will be suspended and how many tens of millions of dollars lost as better data emerges? Against this context, we reiterate that the long-range extramural health research budget of the agency is only $2 million in FY 1989.

Mr. Chairman, I thank you for this opportunity to testify on these issues and would be pleased to answer any questions that you may have.

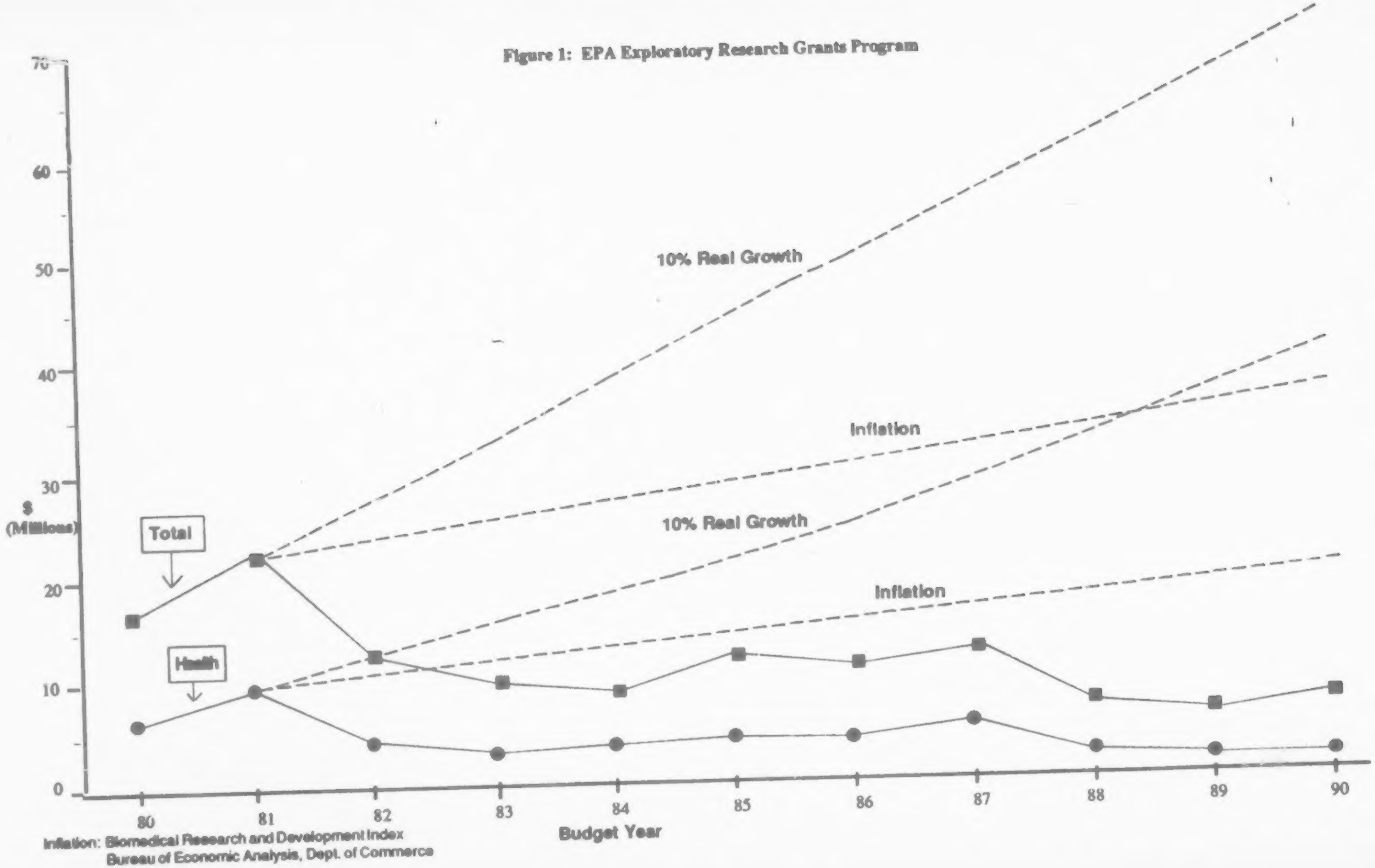

Figure 1: EPA Exploratory Research Grants Program

Inflation: Biomedical Research and Development Index
Bureau of Economic Analysis, Dept. of Commerce

STATEMENT OF DR. HOWARD J. SILVER, CONSORTIUM OF SOCIAL SCIENCE ASSOCIATIONS

Senator KERREY. Dr. Silver.

Dr. SILVER. I am Howard J. Silver, executive director of the Consortium of Social Science Associations. COSSA represents more than 185,000 scientists across the full range of the social and behavioral science disciplines.

As a member of the steering committee on the Coalition for National Science Funding, COSSA supports a commitment to a budget for NSF that keeps it on the doubling track for fiscal year 1993. The $458 million increase that would be necessary to do this represents a significant step for investing in the future greatness of this Nation. Even in this era of budgetary restraint, NAS President Frank Press has recently pointed out that this increase for science in dollar terms is slight compared to increases that Congress has granted other agencies in recent years.

Increases of the magnitude I have proposed would provide sufficient funding to allow the Foundation to take some of the steps recommended in the 1988 NAS report you just heard about.

SOCIAL AND BEHAVIORAL RESEARCH

Why should NSF offer support for social and behavioral sciences? Nobel Laureate, Herbert Simon said:

> Because of its intellectual excitement and its practical value, it's an integral part of our great adventure in understanding the world, including—perhaps most important of all—understanding ourselves.

Social and behavioral research plays an important role in the scientific enterprise in public policy process and the economic and national security of a nation.

Concern over the lack of women and minorities in science has led NSF to use the results of sociological research to try to find ways to improve the situation.

Concern over young people's lack of interest in natural and physical sciences has led NSF to cognitive research and teaching and learning research to help the Foundation determine ways to attract more students to the subject.

Research on the economic returns of scientific investments is used to fuel support for the basic science funding.

In addition, Congress continues to call on social and behavioral scientists to present the results of their research to assist policymakers in making decisions.

In the past 16 months, over 300 social and behavioral scientists have testified before congressional committees on a large number of subjects.

Offering such expert advice and technical information depends on basic research capability and support.

The president of the Urban Institute noted that administrators and legislators have come to expect and rely on large amounts of sophisticated information provided by policy analysts during the past 20 years.

In turn, policy analysts rely on basic social science and methodological research supported by NSF.

Examples: Studies in the homeless teenage mothers and research which in his words would have been impossible but for the pioneering analytical work carried out during NSF behavioral, social sciences grant which allowed reasonable confidence in the result of the survey data.

In addition, NSF is supporting social and behavioral science research on most of the major issues that confront the domestic and foreign policy agenda of the United States, economic stability, all aspects of economic competitiveness, research on attitude formation and change which has helped the Nation offer a meaningful and, in some places, successful response to the AIDS epidemic.

Finally, research on such child development areas as self-perception in family environment and interaction will provide clues to producing an educated, productive next generation of Americans whose service to science and service to decisionmakers and its service to the Nation. Those are areas the subcommittee should urge NSF to fund to the fullest extent possible in the social and behavioral science research that it supports.

Thank you.

Senator KERREY. I want to thank the panel for their presentations. It was very helpful. Thank you very much.

[The statement follows:]

STATEMENT OF DR. HOWARD J. SILVER

EXECUTIVE DIRECTOR

CONSORTIUM OF SOCIAL SCIENCE ASSOCIATIONS (COSSA)

Madame Chairlady and Members of the Subcommittee:

I am Howard J. Silver, Executive Director of the Consortium of Social Science Associations (COSSA). COSSA represents more than 185,000 American scientists across the full range of the social and behavioral science disciplines, functioning as a bridge between the research world and the Washington community. A list of COSSA Member associations, Affiliate societies, and Contributor institutions is attached.

COSSA would like to welcome the new chair to her responsibilities and we look forward to a long and healthy relationship. What follows are comments on the proposed FY 1990 budget for the NSF and the importance of social and behavioral science research at that agency.

As a member of the steering committee of the Coalition for National Science Funding, COSSA supports the commitment to a budget for NSF that keeps it on the doubling track for FY 1993. This requires an appropriation of $2.388 billion for FY 1990, the funding level endorsed in the five year authorization bill passed overwhelmingly by both Houses of Congress last year. The $458 million increase represents a significant step for investing in the future greatness of this nation. Even in this era of budgetary restraint, as National Academy of Sciences' (NAS) President Frank Press has recently pointed out, this increase for science, in dollar terms, is slight compared to increases Congress has granted other agencies in recent years. Furthermore, increased support for America's scientific endeavors reflects an understanding that more basic research today means greater scientific and technological achievement tomorrow. The United States needs in the words of House Science, Space and Technology Committee Chairman Robert Roe, "a long-term strategy to generate new wealth." Limiting the commitment to basic scientific research will surely restrict the nation's ability to compete in the interdependent world of the twenty-first century.

COSSA urges the Subcommittee to allocate $1.91 billion, the authorized level, for research and related activities in FY 1990. In FY 1989, for the first time in five years, the NSF research and related activities budget increased in real terms. There is much catching up to do. Support for the core research program is critical to a balanced investment portfolio at the Foundation. Science and Engineering Education should also receive the authorized level of appropriations, $205.3 million, in FY 1990.

Increases of the magnitude I have proposed above would provide sufficient funding to allow the Foundation to take some of the steps recommended in the 1988 NAS report: The Behavioral and Social Sciences: Achievements and Opportunities. As noted in a joint statement of 19 professional societies in social and behavioral science, NSF has made little or no attempt to address the important initiatives highlighted in the NAS report -- a report NSF funded.

NSF is claiming that funding for the social and behavioral sciences has increased by over 80% from FY 1982 to FY 1988. A clever statistic! If you take FY 1982 as a starting point, the year during which, even NSF Director Erich Bloch has admitted, saw decimation of funding for these disciplines, and then increase their support slightly from year to year, you can produce dramatic increases. However, it might be more instructive to ask, if this support has increased so dramatically, why is funding for these disciplines in the proposed FY 1990 budget barely above their levels of support for FY 1980? Furthermore, given the low funding base, even the "tremendous" increases NSF claims have been slight.

Mr. Bloch advises the social and behavioral science research community to look outside NSF for more funding. However, as the NAS report has pointed out, support for social and behavioral science government-wide from FY 1972-87 in constant dollars decreased by 25 percent. By contrast, during the same period, federal support for other fields of scientific research has grown by 37 percent. Funding for NSF has increased significantly in the past nine years; yet, the share of those funds going to social and behavioral science research has continued to decrease (from 6.1 percent in FY 1980 to just above 4 percent in the proposed FY 1990 budget).

In calling for new federal funding of $240 million for the social and behavioral sciences, the NAS report asks that NSF contribute $60 million. Spread over three years and including support for new fellowships, this request could be met by increasing funding for social and behavioral science research in FY 1990 at NSF by $22 million instead of the proposed $6 million. COSSA asks the Subcommittee to encourage NSF to augment its funding of the social and behavioral sciences.

Why should NSF support the social and behavioral sciences in this manner? Nobel Laureate Herbert Simon of Carnegie-Mellon University put it best: "Because of its intellectual excitement and its practical value ... It is an integral part of our great adventure into understanding the world, including -- perhaps most important of all -- understanding ourselves." Social and behavioral research plays an important role in the scientific enterprise, in the public policy process, and in the economic and national security of the nation.

Serving the Scientific Enterprise

NSF has recognized the importance of applying social and behavioral science research to the challenges facing the scientific enterprise. Concern over the lack of women and minorities in science has led NSF to use the results of sociological research to try to find ways to improve the situation. Concern over young people's lack of interest in the natural and physical sciences has led NSF to fund cognitive research and teaching and learning research in the behavioral sciences to help the Foundation determine ways to attract more students to these subjects. Research on the economic returns of scientific investment is used to fuel support for basic science funding. This service function provided by the social sciences allows NSF to achieve its goal of integrating them with the rest of the Foundation. However, the cost is that basic research in the core disciplines continues to suffer.

As another example, today there is increasing emphasis at the Foundation on the human dimensions of the global change problem. Social and economic research in this area will enhance comprehension of the effect of regulatory, industrial, and agricultural policies on the biology, chemistry, and geology of the earth. Interaction between the social and behavioral sciences and the natural and physical sciences is required to produce information to help policy-makers deal with this important environmental problem.

On May 2, Roberta Miller, Director of NSF's Division of Social and Economic Science (SES) and former COSSA Executive Director, addressed a major conference in Washington on the human dimensions of global change. NSF trumpeted Dr. Miller's speech in a press release. A special initiative in the SES division on human dimensions is underway. Unfortunately, so far, increased funding for this important research area, as in so many other special initiatives in social science at NSF, may supplant rather than supplement existing funding.

Serving Decision Makers

Utilizing their training, including their research backgrounds, social and behavioral scientists serve the CEA, the CBO, the JEC and many of the other agencies of the three branches of government. The Congress continues to call on social and behavioral scientists to present the results of their research to assist policy-makers in making decisions. In the second session of the 100th Congress and the first four months of the 101st, over 300 university- and research institute-based social and behavioral scientists have testified before congressional committees. Their topics varied considerably and reflected the breadth and scope of the social and behavioral sciences. A sample:

Economic Policy: general economic outlook, the deficit, revenue collection proposals, federal monetary policy, securities industry regulation, leveraged buyouts, foreign investment in the United States.

Education and Labor Policy: early childhood development, preschool education, math, science and engineering education, minorities in higher education, U.S. labor in the year 2000, labor shortages, job training.

Health and Welfare Policy: health care in America, long-term health care, federal response to alcoholism, nutrition monitoring, drug enforcement, child care, child support enforcement, overcoming family poverty.

Other Domestic Policies: HUD housing segregation, housing development, housing displacement, age discrimination, rural economic development, immigration law, impact of TV violence.

Foreign Policy: U.S.-Soviet relations, INF treaty, U.S.-Japan relations, U.S.-Asia economic relations, democracy in Central America, international debt.

Defense Policy: defense burdensharing, DOD acquisition policies, long-range defense funding, impact of human factors on the downing of the Iranian airliner.

Governmental Processes: War Powers resolution, line-item veto, court jurisdiction, executive accountability, voter registration standards.

Offering such expert advice and technical information depends on basic research capability and support. This point was made by former HEW Assistant Secretary and now Urban Institute President William Gorham in testimony earlier this year. Gorham noted how a particular set of analytical techniques and data bases developed by grant-supported social scientists "have dramatically increased the power of other social scientists and policy analysts to understand social and economic phenomena and to analyze and predict the effects of policies aimed at changing them." (Gorham's emphasis.) He further noted that administrators and legislators have come to expect and rely on large amounts of sophisticated information provided by policy analysts during the past twenty years. In turn, policy analysts rely on the basic social science and methodological research supported by NSF.

As examples, Gorham cited studies on the homeless, the medically uninsured, teenage mothers, young crack dealers, and very elderly women -- research which "would have been impossible but for the pioneering analytical work carried out under an NSF behavioral and social sciences grant" that allowed "reasonable confidence in the results of survey data." Gorham also suggested that NSF-supported work on selection bias made it possible to evaluate government programs at a fraction of the cost of the social experiments previously used for evaluation purposes.

Serving the Nation

Much of the basic research conducted by social and behavioral scientists at NSF provides the information to help the United States confront its domestic and foreign policy agenda. If you think of the major issues facing America today you will identify NSF-funded social and behavioral research projects.

In addition, the longitudinal data bases supported by NSF for many years -- the Panel Study on Income Dynamics, the General Social Survey, and the National Election Studies -- have painted a portrait of the change and stability of Americans' economic attitudes, social values, and political beliefs. They have accumulated data that provide vast amounts of knowledge on many policy questions. Support for these important sources of information must continue.

There is no more important topic to the nation than war and peace. NSF is supporting social and behavioral research on models of cooperative behavior, dispute initiation and escalation in international politics, decision-making costs, and risk assessments.

The need for economic stability is another major issue impacted by social science research. As former Chairman of the Council of Economic Advisers and Budget Director Charles Schultze has noted, "one of the unappreciated facts about the American economy over the past forty years is its far greater stability in terms of output, income and employment." This arises from a much greater understanding among policy-makers and among the public generally about how monetary and fiscal policy ought to behave when the economy is in recession. "And that improved understanding," Schultze goes on, "was grounded on years of economic research."

Erich Bloch and others have made American competitiveness an important selling point for basic research during the past few years. NSF-sponsored social and behavioral research is examining many aspects of this problem. Research on labor mobility, productivity, real wages, impacts of technological advances, unemployment and labor markets, trade policies, the impact of the 1986 Tax Reform act, and taxpayer compliance all focus on the economic factors of competitiveness. Research on the economic adaptation among Asian immigrants, the immigration history of scientific personnel, and women's employment problems are studies focusing on the changing demographics of the workforce that will affect American economic security in the coming years. Research on family stability, the impacts of child-care arrangements, and coping with family crises are other areas of research supported by NSF to help America adapt to the new economic realities.

Basic social and behavioral research on attitude formation and change and its relation to behavioral change helped the nation offer meaningful and in some places successful responses to the AIDS epidemic. This research can also help us understand the persistence of counter-productive prejudice and stereotyping. It may also offer help to seeking long-range answers to the drug problem.

Finally, the task of generating an educated, productive next generation of Americans will be aided by research conducted by social and behavioral scientists with the support of NSF. Research on such child-development areas as self-perception, family environment and interaction, social stigma and self-esteem, learning and cognition, language and reading acquisition, provide the clues to producing these effective new citizens.

For its service to science, its service to decision-makers, and its service to the nation, COSSA urges the Subcommittee to fund to the fullest extent possible the social and behavioral science research supported by NSF.

Thank you for the opportunity to express our views.

Members

American Anthropological Association
American Economic Association
American Historical Association
American Political Science Association
American Psychological Association
American Sociological Association
American Statistical Association
Association of American Geographers
Association of American Law Schools
Linguistic Society of America

Affiliates

American Assembly of Collegiate Schools of Business
American Association for Public Opinion Research
American Educational Research Association
American Society of Criminology
Association for Asian Studies
Association for the Social Sciences in Health
Eastern Sociological Society
Federation of State Humanities Councils
Gerontological Society of America
History of Science Society
International Studies Association
Law and Society Association
Midwest Sociological Society
National Council on Family Relations
National Council for the Social Studies
North Central Sociological Association
Northeastern Anthropological Association
Operations Research Society of America
Population Association of America
Regional Science Association
Rural Sociological Society
Social Science History Association
Society for the History of Technology
Society for Research on Adolescence
Society for Research in Child Development
Society for the Scientific Study of Religion
Southern Sociological Society
Southwestern Social Science Association
Speech Communication Association
The Institute of Management Sciences

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University of Colorado
Columbia University
Cornell Institute for Social and Economic Research
Cornell University
Duke University
Florida State University
Harvard University
Howard University
University of Illinois
Indiana University
Institute for Social Research, University of Michigan
University of Iowa
University of Maryland
Massachusetts Institute of Technology
Maxwell School of Citizenship and Public Affairs, Syracuse University
University of Michigan
University of Minnesota
University of Missouri
National Opinion Research Center
University of Nebraska
New York University
University of North Carolina, Chapel Hill
Northwestern University
Ohio State University
University of Oregon
University of Pennsylvania
Pennsylvania State University
University of Pittsburgh
Princeton University
Rutgers University
Social Science Research Council
University of Southern California
Stanford University
State University of New York at Stony Brook
University of Tennessee, Knoxville
Texas A&M University
Tulane University
University of Virginia
University of Washington
University of Wisconsin, Madison
University of Wisconsin, Milwaukee
Yale University

PANEL NO. 4

Senator KERREY. Panel No. 4, Mr. Alvin Block, Mr. Bruce Manheim, Ms. Pauline Brooks, and Mr. Raymond Ho. We're missing one.

Is Mr. Block here?

Mr. BLOCK. Right here.

STATEMENT OF MR. ALVIN BLOCK, ESA, INC.

Mr. BLOCK.. Thank you, Mr. Chairman.

I'm Alvin Block, president of ESA. As we grow older, we become more susceptible to the development of one of the degenerative dementias, such as Alzheimer's, Parkinson's, or Huntington's. Some 2.5 million Americans are victims each year of Alzheimer's at an estimated cost of $39 billion in health care.

Huntington's and Parkinson's cripple some 1.5 million men and women and cost $2.5 billion. This represents a significant part of the total annual health care costs for treating disorders without finding a cure.

NEUROCHEMICAL ANALYZER

In the past, I reported on ESA's neurochemical analyzer which provides a profile of the brain's chemistry. This instrument measures whole neurochemical metabolic pathways which can lead to an understanding of various disease mechanisms.

We started delivering this instrumentation in early 1988. The initial experimental results are just starting to become known. In many cases, our customers are reluctant to disclose their research findings until they either publish or achieve commercial utilization.

However, I can report the following applications of this. Massachusetts General Hospital has discovered a fossil mechanism for the enzyme that controls the production of a neurotoxin. This neurotoxin may cause the deterioration of the brain associated with Huntington.

The VA in San Diego has successfully improved a cell modification by L-dopa. It has demonstrated the potential for genetically modified tissue implants in the treatment of Parkinson's.

This would replace the concept of fetal brain implants currently being discussed. In the United States, several researchers have preliminary data showing possible differences in neurochemical patterns between Alzheimer's and normals.

In Japan, a researcher has discovered new and exciting information on the metabolic pathways associated with L-dopa for the treatment of Parkinson's. One limit to the use of this instrumentation is obtaining funding. Program grants generally do not provide funds for major equipment purchases.

We have heard that when a research proposal contains an equipment request, it is looked upon much less favorably. Consequently, many researchers are reluctant to risk the loss of funding by asking for instrumentation.

At present, more units have been purchased for pharmaceutical and disorder research in Japan than in the United States. We only recently released this instrument for sale in Europe where expressed interest in the instrument exceeds that in this country.

I fear that we're going to give up our leadership again in another field. I recommend that our Government establish a National Science policy that focus on goals and priorities in the area of health science.

The United States must maintain its leadership in this area. I recommend that NSF and the VA provide more dedicated funds for instrumentation to allow researchers to have the best available instrumentation in the world.

It is difficult to maintain technical superiority in a field without superior instrumentation.

Thank you.

[The statement follows:]

STATEMENT OF ALVIN BLOCK

PRESIDENT OF
ESA, INCORPORATED

I am Alvin Block, President of ESA, Inc., in Bedford MA. Today, I would like to discuss the problems of our aging population, facing deteriorating health and the ever present threat of developing a debilitating disorder.

The median age in the United States is increasing each year. As we grow older we become more susceptible to the development of one of the degenerative dementias, such as Alzheimer's, Parkinson's, or Huntington's disorders. Each of these is a disease that can devastate its victim, his or her family and their entire life savings.

In any given year as many as 2-1/2 million Americans are victims of Alzheimer's disease at an estimated cost of $39 billion in health care. Huntington's and Parkinson's combined cripple some 1-1/2 million men and women at an estimated cost in excess of $2-1/2 billion.

In the behavioral area, schizophrenia affects 1-1/2 million Americans at an estimated annual cost of $30 billion. Major depression afflicts 5 million adults at a cost not easily calculated.

Mr. Chairman, we are talking about many billions of dollars which represent a significant part of the total health care cost of the United States being spent each year on treating disorders without finding a cure. As the average age in America increases, these costs will continue to grow more rapidly than the increase in the Gross National Product. There is a desperate need to develop a greater understanding of these diseases and their mechanisms in order to treat them more effectively and to prevent their occurrance.

In the past several years, I have reported on a new technology which has been developed by ESA. We now are producing and marketing an instrument based on this technology which provides a profile of the brain's chemistry. This new instrumentation provides significant improvements in sensitivity and selectivity over any other available technique. It can measure whole neurochemical metabolic pathways, the determination of which can lead to an understanding of various disease mechanisms.

We started delivering this instrumentation to customers in early 1988. The initial experimental results from the use of these instruments are just starting to become known. In many cases our customers are reluctant to disclose their research findings until they either publish papers or achieve commercial utilization. However I can report the following applications of this instrument:

o The Massachusetts General Hospital has discovered a possible mechanism for an enzyme that controls the production of a neurotoxin. Over a period of time this neurotoxin may cause the deterioration of the brain associated with Huntington's Disease.

o Also at the Massachusetts General Hospital, research measuring patterns of neurochemicals has shown that different kinds of severe head pain, such as migraine, trigeminal neuralgia and trauma, are related to and may be caused by fundamental defects in the body's biochemistry.

o The Veterans Administration Medical Center and University of California at San Diego have successfully proven genetic cell modification for the continuous generation of "L-dopa". By measuring trace levels of L-dopa, the instrument has demonstrated the potential for the use of genetically modified tissue implants in the treatment of Parkinson's disease. This would replace the concept of brain implants currently being studied for increased L-dopa production.

o In the United States, several researchers have preliminary data showing possible differences in neurotransmitter patterns between Alzheimer's disease and normals.

o In Japan, a researcher has discovered new and exciting information on the metabolic pathways associated with the use of L-dopa for the treatment of Parkinson's disease.

The technology developed by ESA has significant application in biomedical research in affective and degenerative disorders as well as in a number of other diverse areas related to improving the quality of life. For example, we recently have performed for the food industry some preliminary analyses for the quality control of natural fruit juices.

One of the primary limits to the utilization of this instrumentation in the United States is the difficulty in obtaining funding. Program grants generally do not provide funds for major equipment purchases. We have heard that when a research proposal contains a request for this instrument or any major instrument purchase, the grant proposal is looked upon much less favorably than if it had not included the procurement of expensive equipment. Consequently, many researchers are reluctant to risk the funding of their grant requests by asking for this instrumentation.

At present more units have been purchased for pharmaceutical and disorder related research in Japan than in the United States. We only recently released this instrument for sale in Europe, where the expressed interest in the instrument exceeds that in this country. I fear that the United States is going to give up its leadership in yet another field.

I would like to recommend that the United States government establish a national science policy to focus on goals and priorities in the area of health science. The US must maintain its leadership in this area. I recommend that the National Science Foundation and the Veterans' Administration provide more dedicated funds for instrumentation in order to allow researchers to update their equipment on a routine basis, and to have access to the best available instrumentation in the world. It is difficult to maintain technical superiority in a field without superior instrumentation. At present, our researchers are continually falling behind our foreign counterparts. I also recommend continued support of the Small Business Innovation Research (SBIR) Program to bring together the contribution of small business with government research goals.

STATEMENT OF MS. PAULINE BROOKS, CHILDREN'S TELEVISION WORKSHOP

Senator KERREY. I think Mr. Manheim is not here.

Ms. Pauline Brooks, you're next.

Ms. BROOKS. Good morning, Mr. Chairman.

I'm asking you to provide adequate funding for NSF's materials development in formal science education, which is where the pipeline you have been hearing about this morning really begins, right at the target audience of our programs.

MASS MEDIA AS EDUCATIONAL TOOL

The Children's Television Workshop's mission is to provide education to youngsters through the use of mass media. We started with the creation of Sesame Street 20 years ago and since then, with strong support of NSF, we have created 3/2/1 Contact, a daily series about science, and Square One TV, a daily series of mathematics, both for 8–12 year olds, seen on public television nationally.

Television is one of the most powerful influences in our lives. The typical child spends over 23 hours each week watching television. By funding innovative educational programming, we can turn this boggling fact to our advantage.

NSF has recognized this and has provided vision and leadership at the Federal level in the efforts to improve our children's achievement in science and mathematics.

Square One TV was designed to helped tackle problems in mathematics achievement by reaching students who are at risk of falling behind, and keeping them motivated and involved.

Through its first three seasons, NSF has been the leading funder of the series, at the core of a consortium of public and private funders.

Square One TV's premier season reached nearly one-half of all children nationally between the ages of 6 and 11. It had high appeal for children regardless of age or gender.

The core of material was high and the children learned and the series reaches its audience at a cost of pennies per viewer per show. We're now asking NSF to support two additional seasons.

3/2/1/ CONTACT

Over a 10-year period, the National Science Foundation has also been a leading Federal funder of 3/2/1 Contact, which is our critically acclaimed science series.

We know that television alone cannot solve our education problems, but it does have a very unique and valuable role to play in supplementing and supporting the work of schools and extending the learning day.

Mr. Chairman, we urge this committee to support the important work of NSF and specifically the materials development and informal science education division.

In addition, we urge you to encourage them to continue supporting deserving programs such as Square One and 3/2/1 Contact, and to continue to have the means to provide vision and leadership as we face future educational challenges.

Thank you.

Senator **Kerrey**. Thank you.
[The statement follows:]

Statement of Pauline H. Brooks

Mr. Chairman and members of the Subcommittee

Thank you for the opportunity to appear before you today. I am here to support the work of the National Science Foundation. Specifically I want to urge you to provide adequate funding for the vital work of NSF's Materials Development and Informal Science Education Division and to urge NSF to continue its strong support of Square One TV, and 3-2-1 Contact.

The Children's Television Workshop's mission is to educate young people through the use of mass media. We began by creating Sesame Street to help prepare young children to meet the challenges that awaited them in America's classrooms. Twenty years later there are 40 million "graduates" of Sesame Street. Our young alumni are a testimony to the power of television to act as an ally of formal education.

In the past two decades, we've learned a lot about what television can and should do. We know, for example, that preparing preschoolers for the classroom is not enough—children need continued support if they are to progress successfully through elementary school and beyond. To help meet their needs we created Square One TV, a daily series on mathematics and 3-2-1 Contact, a daily series on science, both with the strong support of NSF.

For better and worse, television is one of the most powerful influences in our lives. Unfortunately, for children who typically watch over 23 hours every week, finding the "better" can be challenge in itself. In spite of the increased viewing options presented by cable networks, public television remains the only place young people can turn to regularly and learn. Programs like Square One TV, 3-2-1 Contact, Reading Rainbow and Degrassi Junior High illustrate the medium's enormous potential to enlighten its young audience.

Educational television extends the school day, by providing learning opportunities at home. It reaches and motivates all children, including minorities and the poor. Finally, it responds to the changing educational needs of an increasingly complex and technological world.

This last point is especially crucial. We are all aware of the extraordinary problems teachers and parents face as they attempt to educate America's 21st century work force. We understand that future workers need a strong foundation in the twin disciplines of mathematics and science if our country is to compete effectively in the global economic community.

The National Science Foundation has provided vision and leadership at the federal level in the effort to improve our children's achievement in science and mathematics. Its support of Square One TV illustrates its unique understanding of how to use television to support the work of local educators.

The problem of student achievement in mathematics is well documented. Evaluations by the National Assessment of Educational Progress reveal that American students are failing to adequately learn the mathematics they will need as adults. The gap between the level of math taught and student achievement first appears in elementary school and widens as they advance through school. This is true for all students, but most pronounced for women, Blacks and Hispanics, who fall furthest behind.

Square One TV was designed to help tackle these problems by reaching students who are at risk of falling behind in mathematics education and keeping them motivated and involved. It was created: To promote positive attitudes toward, and enthusiasm for, mathematics; to encourage the use and application of problem solving processes; and to present sound mathematical content in an interesting, accessible and meaningful manner.

Through its first three seasons, NSF has been the lead funder of Square One TV. Its initial commitment of $5 million leveraged $11 million more from a consortium of public and private funders, including IBM, The Mellon Foundation, the Carnegie Corporation, the Corporation for Public Broadcasting and the U.S. Department of Education.

And what have been the results of NSF's three year commitment to Square One TV? Young people in large numbers are enjoying and learning from the series. Let me share with you some accomplishments.

National Nielsen estimates showed that during its premiere season the series reached one-quarter of all homes in the United States. More importantly, it reached nearly half of all households with children between the ages of 6 and 11.

Most importantly, research suggests that Square One TV works. Research studies have revealed high appeal with children regardless of age or sex. Recall of material was high at all levels. Children at all ages demonstrated the ability to extend what they learned by using it to solve other mathematics problems.

We are now looking to NSF to further support educational television with an investment in the fourth and fifth seasons of Square One TV. New programming allows us to maintain audience loyalty in a world where we must compete for children's attention, and that allows us to expand the educational reach of our series. For NSF, continued support allows them to leverage their investment in Square One TV. Today our mathematics series reaches children at a cost of pennies per viewer per show.

NSF has also taken the lead in promoting the use of television to address the crisis in science education. Over a ten year period, they were the leading federal funder for 3-2-1 Contact, our critically acclaimed science series.

NSF's long term commitment to 3-2-1 Contact has had powerful impact. The science series continues to reach 3.3 million households monthly with a child under 12. Research studies show that 3-2-1 Contact changes children's attitudes toward science and motivates children to learn away from the television set. An NSF funded study revealed that the series succeeds in reaching groups of students at risk of not learning science, including girls and minority viewers.

3-2-1 Contact is no longer in production, but we are convinced it can continue to help children learn science. Toward that end, we are asking NSF to support our efforts to explore innovative ways of extending the life of the series. For example, we are developing plans to build an inventory of over 200 episodes of 3-2-1 Contact in school media centers across the country. NSF is currently reviewing our proposal for support of this and other efforts to extend the value of 3-2-1 Contact. We ask that you continue to urge NSF to support this work.

Last year marked the 20th anniversary of Seasame Street. In the two decades since we began our work, we have witnessed an explosive growth in communications technology. At a time when the needs of our children may be greater than ever before, so is the educational potential of television. Obviously television alone cannot solve our educational problems, but it has a unique and valuable role to play, supplementing and supporting the work of schools.

Education in this country is primarily the concern of parents, educators and local governments, which is as it should be. But it is critical that we not lose sight of the limited but vital role the federal government must play. After all, it is not solely the responsibility of the citizens of Iowa or Michigan or Tennessee to compete with the countries of Europe and Asia—it is an issue that challenges us as a nation.

It is not suprising to us that NSF should be among the leading proponents of the use of television and related technologies to educate our children. Mr. Chairman, we urge this committee to do whatever it can to ensure that the important work at NSF continues. Specifically, we urge you to fully fund the Materials Development and Informal Science Education Division. In addition we urge you to encourage NSF to support deserving television series such as Square One TV and 3-2-1 Contact, and to continue providing vision and leadership as we meet present and future educational challenges.

Thank you.

SUPPORT FOR SCIENCE EDUCATION

STATEMENT OF RAYMOND HO, NATIONAL ASSOCIATION OF PUBLIC TELEVISION STATIONS

Senator KERREY. Raymond Ho.

Mr. HO. Senator, good morning. I'm Raymond Ho, president of Maryland Public Television. We're the counterpart of the Nebraska Educational Television Network in this region.

You can get our signal in your home here. I'm here representing the National Association of Public Television Stations. I'm here to support increased funding for science education at the NSF.

As part of our educational mission, public television provides high-quality science television programs to all Americans regularly in their homes and in the classroom.

The growing concerns you've heard earlier on from all the different people here seem to point out the need for literacy in science and math, and I think this presents a window of opportunity for public television.

We can be part of the solution to this problem, but we're going to need increased funding for this program at NSF and from this committee.

Science programs distributed by PBS reach 18.5 million households in a given week. That's 45 million viewers in a given week.

Somebody was talking about filling up this room. I can imagine what 45 million people are like when you think about a stadium and then you keep multiplying it and multiplying it in all 50 States. That's what public television is doing with their science programs.

These science programs received critical support from the National Science Foundation at the early stages. That's in the research and development, and later on in production.

Special series like The Brain and the sequel series The Mind represent some of our most successful efforts in science programs. They receive funding from the National Science Foundation.

Not only do these programs present important information in a comprehensive manner, they also stimulate the quest for scientific knowledge among our viewers.

Incidentally, these series are also used by colleges across America as college credit courses. Our regular programs, like Nova, are being used by 95,000 high school teachers to help educate over 10.5 million students each year.

Many of our children do not even have access to sophisticated lab equipment or even up-to-date textbooks. You've heard about the important children's programming, 3/2/1 Contact, Reading Rainbow, and the Square One TV. They're all part of the public television mix.

By using television's technical artistry and pacing, we can attract the attention of youngsters to math and science. We in Maryland are also involved in producing programs in this area. A $1.2 million grant from the National Science Foundation has enabled the Maryland State Department of Education and the National Science Teachers Association to work with us to develop a series called Wee Ones.

This is a new series aimed at teaching elementary physics to children 5 and 6 years old, with a special emphasis on minorities.

I think all these programs are effective ways of combining science education to attract the attention of our young people and to offer them an enjoyable form of learning.

I urge the subcommittee to increase its support for science education programs. Last year, public television received approximately $8 million from the National Science Foundation. We believe that the success of public television projects funded in this area suggests the need for reasonable increases in this category. They're an important part of our Nation's overall educational need, to strengthen math and science education at all levels.

Thank you.

[The statement follows:]

STATEMENT OF RAYMOND K.K. HO

Introduction

The National Association of Public Television Stations (NAPTS) is pleased once again to present testimony in support of the important educational programs funded by the National Science Foundation (NSF). Our membership, the nation's public television stations, has utilized funds from NSF to present to the American public high quality science and math education television programming. We have been grateful for this important federal support which has responded to the clear need for science and mathematics education nationwide.

As part of its broad educational mission, public television has always sought to provide high quality science television programs to all Americans in their homes and classrooms. The growing concern in the business and educational communities about the math and science literacy of our nation's young people has not been lost on America's public television providers.

Recent federal efforts to close the gaps between American and foreign education in math and science and shore up America's competitiveness in science and math have been welcome developments. Public television would like to continue to be part of the solution to these critical problems and needs the support of the National Science Foundation in order to succeed.

Public Television Fills Need for General Audience Science Programs

We in public television have seen a tremendous response to the many science programs, many of them supported by NSF, that our stations produce and distribute. Science programs distributed by the Public Broadcasting Service (PBS) reach some 18.5 million households--or 46 million viewers--in this country every week. Science and nature programs, with subjects ranging from tigers to sharks to the human brain, represent the top four spots on the list of all time most-watched PBS evening programs. And, taken as a group, science programming on public television geared for all age and education levels attracts more viewers than public affairs or cultural and entertainment programming.

By providing innovative, high quality science programming free to its viewers, public television is not only filling a void for this kind of programming not found regularly on other stations, but it is responding to the hunger the American people have for science education.

Our eight-part landmark series The Brain, partially funded by NSF's Science and Engineering Education Directorate (SEE), first ran in 1984 to wide critical and academic acclaim. This series' overwhelming success pointed very clearly to how the cooperative efforts of the federal government's science-related agencies and the public television system can combine to produce needed, academically-oriented and well-received science programming.

The Brain's sequel series entitled The Mind was completed and aired in this past television season. The new series focused not only on the science of the brain itself, but on what role the brain plays in human development. The interdisciplinary approach highlighted such topics as aging, addiction, communication, and thinking.

WNET/New York, the producer of the series, received an extraordinary advance commitment of $1 million from the nation's public television stations to purchase and carry the series. More important, however, was the initial commitment of $500,000 the series producer received from NSF, and the additional $320,000 the series received from the National Institutes of Health (NIH) through NSF. The highly technical nature of the series, involving the consultation of top-level scientists and the use of advanced video animation, translated into high production costs, in this case estimated at over $8 million for nine one-hour programs. The importance of the support of the NSF in such a monumental undertaking cannot be overestimated.

WNET is currently involved in two new NSF-funded projects. One, a four part series on theories of language independently produced by Gene Searchinger, received $365,000 from NSF. The other, "Black Astronauts", an independent production by Bill Miles, received another $100,000.

A fascinating series currently under development at WNET/New York and KCET/Los Angeles for projected airing in 1990 has been given important seed money from NSF. Childhood, an 8-10 part series which will explore the concept of childhood, taking a look at how parents and societies have raised their children throughout history, has received a total of $400,000 from NSF to start its production.

The weekly science series NOVA produced by WGBH/Boston, received initial important NSF support in 1972 and was continually nurtured by the NSF until our stations could afford the programs' cost themselves. Three NOVA programs appear on the list of most-watched programs in PBS history; the series is regularly seen by as many as 20 million Americans per broadcast. Nearly 95,000 high school teachers use the series to educate over 10.5 million students nationwide, making them the most widely used PBS programs as instructional television in our nation's schools.

NOVA has received two recent program grants from NSF. One awarded in 1987 at $50,000 helped document the appearance of the "supernova", or exploding star, and another at $500,000 in 1988 is presently helping the series produce an eight part special on molecular biology.

In late FY 1987, NSF awarded $160,000 to the independent producer East Side Productions for the highly acclaimed film "Stand and Deliver", a dramatic presentation starring Edward Olmos that focuses on the life of a high school calculus teacher in an Hispanic neighborhood. The film, which ran in limited movie distribution, received additional funding for this year's television release through the public television consortium American Playhouse.

Math and Science for Children: A Public Television Specialty

In the area of children's science and math educational television, the NSF has helped make possible the development and production of 3-2-1 Contact and the math series Square One TV. Both of these series are geared to the 8 to 12-year-old viewer, and both are produced by the Children's Television Workshop, producer of Sesame Street. In addition, NSF funds for series like Reading Rainbow and others have helped interest children in math and science and have served as useful classroom tools for elementary school teachers.

Square One TV premiered on public television last January after CTW spent years in researching and producing 75 half-hour programs that would hold the interest of children while teaching mathematical concepts. The design of Square One TV was made by close collaboration of producers, researchers, academics, and children. Teachers are using the show both in the classroom to supplement lessons and as homework to reinforce mathematical skills. Two grants of $3 million each for FYs 1987 and 1988 from NSF have been crucial in developing this show, as well as in attracting financial support from the Andrew W. Mellon Foundation, the Carnegie Corporation, and the IBM Corporation.

3-2-1 Contact is carried on 218 of our public television stations and is seen by 7.5 million viewers each week. NSF provides partial funding for the series, including $236,000 this year. Substantial funding help from the U.S. Department of Education allows for the yearly production of new episodes to the series. The series is designed not only to educate young people in science subjects, but also to encourage their interest in scientific study. Over 750,000 elementary school teachers receive the program's companion teacher guide, and science museums and schools have established weekend activities to support and extend the enthusiasm created by the program.

A continuing funding commitment from the NSF has allowed another of public television's very successful children's series to expand its scope. Reading Rainbow, the highly acclaimed reading series hosted by LeVar Burton is co-produced by Great Plains National Instructional Television Library and public TV station WNED/Buffalo, New York, in association with Lancit Productions, New York City. This series received a commitment from NSF to add special science programs to the series. NSF has awarded the series $250,000 a year for three years for new programs featuring science reading.

Reading Rainbow has already prompted measurable interest in summer reading by children nationwide. According to the results of a survey completed by RMC Research of children's librarians, 46% of those surveyed reported an increase in summer reading prompted by the series, 67% of the librarians attributed at least some degree of increase in book circulation to the series, and most importantly, 75% believed the series also stimulated parents' interest in children's reading. The results of this national survey paint Reading Rainbow as an unqualified success from the perspective of children's librarians. With the addition of new science programs to the series, more enthusiasm has been generated for science reading and learning during the school vacation months.

Formal Science Education at All Levels Assisted by Public Television

We are all too well aware of our need to upgrade science teaching nationwide. From our perspective in public television, this situation is as unfortunate as it is unnecessary. The program production and distribution capabilities of this nation's educational television system offer a unique resource for the improvement of elementary, secondary, and post-secondary science and mathematics education on a wide scale and in a cost-effective manner. Because our system reaches about 97% of the U.S. population, it is especially well-suited to reaching vast numbers of people as well as targeting specific pockets of students. Public television stations can develop and provide a comprehensive package of teacher-training materials--programs that can be used as in-service teacher training or as college-credit courses.

Public television also needs more college level courses, not just for our teachers, but for others in the workforce who need to upgrade their education. PBS's Adult Learning Service (ALS) is doing just that. By providing "telecourses"--college-level television series supplemented and reinforced with textbooks, study guides, and class meetings--PBS is reaching half a million college and university students at over 750 institutions of higher learning across the country.

A survey commissioned by the CPB/Annenberg Project of ALS students found that over two-thirds of the students were female, only 23 percent of the students were of traditional college age (18-22 years old), most were in 23-29 year old categories, and the proportion of women increased with age. The survey also showed that 40 percent of the students in telecourses enrolled because an on-campus section of the course would conflict with their work schedules.

Both The Brain and The Mind have been developed into college level television courses offered by ALS. A physics course produced by the California Institute of Technology through CPB/Annenberg and offered by ALS, The Mechanical Universe, provides three levels of physics instruction. The Mechanical Universe can be geared either to liberal arts students fulfilling a general science requirement, to the science or engineering majors demanding more rigorous preparation, or to secondary school teachers seeking to upgrade their physics teaching skills.

NSF has sponsored this last application by initiating a project in which parts of the course have been adapted for use in high school classrooms. Teachers who find themselves teaching high school physics in spite of inadequate preparation will find that by enrolling themselves in The Mechanical Universe course and using the NSF video modules in their classes, they will be able to present their students with instruction of the highest quality.

In 1987, NSF provided $400,000 to fund another course currently in production cooperatively with CPB/Annenberg. The series on archaeology from WQED/Pittsburgh called Time Travelers should be ready within the next few years.

In Arizona and South Carolina, public television stations are providing graduate level technological, engineering and business administration courses. In Arizona, these courses are being used by IBM, Burr Brown, Hughes, Motorola and other electronics firms as well as the Army's electronics facility at Fort Huachaca and Sierra Vista. In South Carolina, 60 percent of the graduate degrees in business administration and engineering that are conferred by the University of South Carolina each year go to these telecasting students. This service helps our nation's workforce and servicemen and women improve their skills and fosters our nation's international industrial competitiveness as well.

Conclusion

With the steady support of NSF through the years, public television has provided high quality science programming that equally fascinates and educates its intended audience. Our audience response has shown us that we need to develop more regular series like NOVA that explore new technology and scientific innovation and more limited series like The Brain and The Mind that explore specific scientific fields. The tremendous success of Square One TV, 3-2-1 Contact, and our college courses has shown that more efforts in those areas can help conquer "science fear" in our nation's student body.

The critical assistance and guidance provided by the National Science Foundation's Science and Engineering Education Directorate will continue to be necessary to achieving those goals. We believe that the success of these TV projects suggests the need for reasonable increase in this category at NSF. These projects are an important part of NSF's overall education strategy in strengthening America's science and math education at both pre-college and higher education levels.

We are also aware that the U.S. Department of Education has previously and, in our view, wisely, matched funds with NSF on several of these media projects, including 3-2-1 Contact and Square One TV. We recommend that the Congress encourage the Department of Education to continue its participation in this very useful manner.

We urge you to appropriate as much as you can for the work of the National Science Foundation and that NSF be encouraged to direct as much as they can to using our nationwide system of public television stations to help bring more science information and education to all Americans.

Thank you.

Senator KERREY. Thank's to all of you on the panel. We really appreciate it.

PANEL NO. 5

The next panel is Mr. Phil Riggin, Dr. Ken Dretchen, John Farrar, John Lipkin, John Kastor, and Dr. John Dennis.

The first witness is Mr. Riggin, Director of the National Legislative Commission of the American Legion.

DEPARTMENT OF VETERANS AFFAIRS

STATEMENT OF E. PHILIP RIGGIN, THE AMERICAN LEGION

Mr. RIGGIN. Thank you, Mr. Chairman.

The American Legion deeply appreciates the opportunity to present its views on the fiscal year 1990 appropriations for veterans programs.

Before presenting those views, however, we would like to briefly discuss the fiscal year 1989 supplemental appropriations matter.

Our organization commends a number of the members of this subcommittee for their expressed endorsement of a supplemental for several VA benefits and services.

As you know, this measure was approved by the House and Senate yesterday.

VA FACING ELIMINATION OF 400 EMPLOYEES

We urge the subcommittee to continue support for these funds which are so desperately needed to correct a budgetary situation which is now requiring the elimination, or soon will require the elimination of 400 VA medical employees each month.

Mr. Chairman, the Department of Veterans Affairs is facing a budgetary crisis, particularly in the delivery of medical care and the operation of regional offices nationwide. In both cases, the principal problems are inadequate staffing levels; in medical care, a variety of services are being cut back or have been eliminated altogether.

These include outpatient care, contract nursing home care, elective surgery, pharmacy prescriptions, equipment replacement, and maintenance work.

During the past 2 years, an estimated 15,000 inpatient beds have been shut down because of staff shortages. Similar money problems are being experienced in the medical research hospital construction accounts.

In fact, it's been reported that these conditions may be jeopardizing the VA's affiliation with a variety of medical schools nationwide.

DELAYS EXPERIENCED IN ADJUDICATING VETERANS' BENEFITS

Also hard-hit in recent years has been the system by which veterans' benefits are administered. Since 1979, about one-third of all VA regional office employees have been eliminated; despite computerization of some of these benefit procedures, there are now extended delays in adjudicating benefit applications and the management of the VA's Home Loan Program has been spotty at best.

We are convinced that VA operations in recent years have been a model of fiscal restraint. During the past decade, federally-supported, nonveterans health care has annually risen at a rate that is two and a half times the rate of VA medicine.

Spending for veterans' educational assistance is now only a fraction of what it was 10 years ago. Overall, the VA budget during that period has risen at only one-third the rate of all Federal spending; therefore, from two perspectives—meeting the needs of veterans and on a purely budgetary basis—we feel that VA presents a very compelling case for additional financial resources.

On a related matter, Mr. Chairman, during the past week, our members have been contacting selected Senators and Representatives to ensure that your subcommittee and your House counterpart are treated fairly during the appropriations allocation process.

We understand how critical this is to the overall budgetary exercise and we stand ready to assist you and your colleagues any way we can.

That concludes our summary. We'd be happy to answer any questions you may have.

Senator KERREY. Thank you.

[The statement follows:]

STATEMENT OF E. PHILIP RIGGIN

Madam Chair and Members of the Subcommittee:

At the outset Madam Chair, The American Legion takes this opportunity to thank you for the timely and forceful manner in which you addressed the sorely needed FY 1989 supplemental appropriation for the Department of Veterans Affairs which is currently working its way through the Congress. One can hardly address the FY 1990 budget without speaking of the supplemental for the current fiscal year. Absent the supplemental, we shudder to think of what would happen to the VA medical care program. Therefore, we sincerely appreciate your efforts to provide the badly needed additional funding.

In setting forth the views of The American Legion on appropriations for FY 1990 for Function 700 (Veterans Benefits and Services), we will, for the most part, limit our remarks to what we consider to be the most critical areas of concern in the budget.

Madam Chair, as you are aware the proposed budget set forth for VA by the Reagan Administration for FY 1990 was basically adopted by the Administration of President Bush, with a very few specific amendments.

The Reagan Administration proposed for the Department of Veterans Affairs budget authority of $30 billion. Included in the total is an appropriation request for $28.6 billion, a net amount of $84 million related to proposed legislation and $1.4 billion in permanent authorizations and offsetting receipts. The actual appropriation request is an increase of $193 million over funds authorized for the current fiscal year. While the proposed increase in funding appears to have some positive points, there are a number of ill-considered proposals incorporated into the structure of this budget which we have addressed before the oversight committees.

VETERANS HEALTH SERVICES AND RESEARCH ADMINISTRATION

The American Legion's major concern obviously relates to the medical care funding in the Veterans Health Services and Research Administration.

A myriad of factors are responsible for the current fiscal crisis that exists in the VA medical care system. Health care funding has been decremental over the past several years. Experience verifies this as our Field Representatives visit medical centers whose officials have continually attempted to do more with less. Dollars have been withdrawn for the one percent productivity incentive, alleged workload reductions, Gramm-Rudman-Hollings reductions, as well as escalating costs for drugs, supplies and medical technologies. Add to that the fact that new programs have been legislatively implemented with no additional funding provided. This combination of factors has created a scenario where the budget has progressively become totally inadequate. What we are witnessing today is the cumulative effect of several years of funding deficits, coupled with the fact that the demand for care continues to increase.

Madam Chair, because of our concerns about the funding shortage and its effect on VA medical care facilities, The American Legion undertook a survey of every VA medical center director in November 1988. The purpose of the survey was to secure definitive information on the impact of the current funding shortfall. Every hospital director in the system completed the questionnaire and returned it to our office. The data was analyzed in early March.

The following is a summary of the findings of The American Legion survey:

- The vast majority of respondents (135 out of 159) reported that they either had or would soon implement descretionary workload reductions in both inpatient and outpatient care.

- Directors at 72 facilities reported delays in specialty clinic appointments.

- A total of 113 facilities reported either reduction or elimination of funds for contract nursing home care.

- Elective surgery delays were reported by 85 facilities.

- A majority of medical centers have initiated pharmacy service reductions.

- A total of 133 facilities reported deficits in non-recurring money (NRM) funding for maintenance, equipment and supplies. The accumulated deficit for FY 1989 is as follows:

Equipment and Supplies	$188.6 million
Maintenance	$146.3 million

- The number of hospital beds reported closed since July 1, 1988 for budgetary or staffing shortages is 2,652. This is over and above the 13,000 beds reported closed in a survey conducted by the Veterans Affairs Committee prior to July 1.

Madam Chair, these are only some of the problems that are plaguing the medical care system as the result of funding shortages.

The House Committee on Veterans Affairs has recommended slightly over $11.8 billion for the medical care account for FY 1990. The American Legion feels very strongly that at least that amount is needed to prevent further erosion in the VA medical care system.

MEDICAL AND PROSTHETIC RESEARCH

The budget request for Medical and Prosthetic Research is $197.3 million, representing a decrease of $12.9 million from the current fiscal year. In addition the proposal would reduce FTEE by 616.

The American Legion is strongly opposed to the proposed decreases in funding and average employment. The Department of Veterans Affairs Medical and Prosthetic Research Program is a matter of particular interest to this organization, as a result of our sensitivity to the importance of research in the triad of the VA health care program: clinical care, education of health manpower and research. These three functions cannot thrive independently - the presence of the other two is required.

It would be impossible for VA to continue the provision of high quality medical care without a strongly funded research program. Much of the research in which VA engages is basic research which is advantageous not only to veterans, but is of direct benefit to all mankind. Equally as important is the fact that a strong research program ensures the recruitment and retention of high quality physicians into VA service. The Federal Government would make no wiser an investment than ensuring a vigorous and viable VA research program which benefits the entire American people.

GRANTS FOR CONSTRUCTION OF STATE EXTENDED CARE FACILITIES

The grant program assists the States in acquiring or constructing State home facilities for the furnishing of domiciliary, nursing home or hospital care to veterans.

The Administration's budget request for grants for construction of State extended care facilities is $42 million. Based upon the priority list of applications pending approval and subject to change upon establishment of the next priority list, the FY 1990 appropriation request of $42 million will provide for six projects which will produce 760 nursing home beds and 326 domiciliary beds.

The American Legion is extremely aware of the importance of the services provided by State homes, in that they have substantially reduced the burden that otherwise would have been borne by the Department of Veterans Affairs. As we continue to move into a period of an aging veteran population, the States can be of major assistance to the Federal Government in providing care for the elderly through State extended care facilities. In order to ensure that the States can provide the facilities, adequate funding must be appropriated so that proposed projects may be completed.

MEDICAL CONSTRUCTION

The FY 1990 budget proposal for all construction of $487.6 million reflects an overall decrease of $13 million from the current fiscal year. Of that, funding for replacement and modernization of existing facilities is proposed at $183 million.

A long-standing goal of The American Legion is to ensure that top quality medical care is provided to all eligible veterans. To achieve this, sufficient funding must be provided to maintain the capital plant of the VA medical care system by upgrading and replacing aging and outdated facilities.

The Committee on Veterans Affairs has recommended $668 million for medical construction for FY 1990, and The American Legion fully supports that recommendation.

GENERAL OPERATING EXPENSES

A total of $803.6 million has been requested for the GOE account for FY 1990 by the Reagan Administration.

Of particular importance to us is the request relating to the Veterans Benefits Administration. The budget proposal calls for a reduction of overall employment from 12,650 to 12,100 FTEE, a decrease of 550. It must be pointed out that these reductions would most directly affect the activities of the regional offices. If enacted, the level of employment in VBA will have been reduced by more than 6,000 FTEE since 1979.

The American Legion remains deeply concerned about the cumulative affect that consistent and persistent losses have had and are continuing to have upon the individual field stations. Quality and timeliness in claims processing and the delivery of benefits and services to veterans and their dependents has deteriorated. We are aware of this not only from our own experience, but it is also reflected in the agency's own figures. We are convinced that the Veterans Benefits Administration cannot operate efficiently at the projected employment levels.

The Veterans Affairs Committee has set forth a recommendation of $851 million for General Operating Expenses, and we support that recommendation.

Madam Chair, that completes our statement. The American Legion appreciates this opportunity to present to you its views and concerns relating to the funding of the Department of Veterans Affairs.

STATEMENT OF DR. KENNETH DRETCHEN, AMERICAN HEART ASSOCIATION

CARDIOVASCULAR DISEASES AND STROKE LEADING CAUSES OF DEATH

Senator **KERREY**. The next witness is Dr. Kenneth Dretchen.

Dr. **DRETCHEN**. For the record, I am Kenneth Dretchen, professor of pharmacology, Georgetown University School of Medicine, and Research Committee Chairman of the American Heart Association, Nation's capital affiliate.

It is my pleasure to offer the Heart Association's comments and funding recommendations for the Department of Veterans Affairs Medical Research Service Program.

Cardiovascular diseases and stroke remain the leading cause of death in the United States, claiming about one million lives each year.

In 1989, the cost of cardiovascular disease is estimated to be $88.2 billion in medical expenses and lost productivity. However, there are some positive trends.

From 1976 to 1986, the age-adjusted death rate from heart attack fell by 27.9 percent; down from stroke declines by 40.2 percent. But, adequate funding of Federal biomedical research is critical.

The VA Medical Research Service Program's support for cardiovascular research makes up a small portion of the overall Federal research contribution in this area. However, the MRS plays an important role in cardiovascular research.

We believe that it deserves the strong support of both the Heart Association and Congress.

The emphasis of the VA cardiovascular research is largely clinical in nature. In fact, the VA is a major contributor to the Nation's clinical research. Thus, the VA plays a unique role in the research community because of its ability to translate immediate basic research findings into the clinical practice setting.

The administration's fiscal year 1990 budget includes approximately $168 million for the VA MRS, a 7.11 percent reduction in appropriated funds from 1989.

These proposed reductions affect all components of the MRS program that are of concern to the Heart Association, including, first, the investigator-initiated studies.

This program constitutes 77 percent of the MRS budget. Under the President's budget, this program would be cut by almost 7 percent with a reduction of 143 fulltime employees.

COOPERATIVE STUDIES

Second are cooperative studies. These studies, unique to the VA, provide a mechanism in which research on the effectiveness of diagnostic or therapeutic techniques can give statistically significant result by pooling data on patients in a number of VA hospitals.

The President's budget would require that this program be reduced by almost 4 percent.

Third, career development awards. Under the administration's budget, only currently approved career development awards would be funded. The Heart Association believes that these proposed reductions are short-sighted because VA research in the area of cardiovascular disease presents an integral part of the overall scientific effort in the field.

Moreover, the proposals will have a negative impact on the entire VA MRS program.

The American Heart Association recommends a fiscal year 1990 appropriation of $215.3 million for this VA MRS program. This increase for the VA program would continue current research momentum in cardiovascular disease within the VA and help to maintain the VA's vital role in the overall scientific effort in the field.

The Heart Association firmly believes that today's investment in biomedical research will lead to future returns, including continued decrease in death rates from heart attack and stroke and reduce Federal outlays for hospitals and long-range expenses.

Thank you.

Senator **Kerrey**. Thank you.

[The statement follows:]

STATEMENT OF DR. KENNETH DRETCHEN

I am Kenneth Dretchen, professor of pharmacology at Georgetown University School of Medicine and research committee chairman of the American Heart Association's (AHA) Nation's Capital Affiliate.

The AHA is one of the world's largest voluntary health organizations. Our 56 affiliates and 1,800 local division offices cover all 50 states, the District of Columbia, and Puerto Rico. Approximately 2.4 million volunteers join with the AHA each year to carry out its mission, the reduction of premature death and disability from cardiovascular diseases and stroke. In accomplishing this goal, the AHA works closely with related Federal research, education, and prevention programs. I am pleased to have this opportunity to make our FY 1990 funding recommendation for the Department of Veterans Affairs' (VA) Medical Research Service (MRS) program, one area of the Medical and Prosthetic Research program.

Cardiovascular diseases and stroke remain the leading cause of death in the United States, claiming about one million lives each year. Annually, these diseases kill almost as many Americans as cancer, accidents, pneumonia, influenza, and all other causes of death combined. In addition, more than one in four Americans suffer some form of these diseases. We estimate that over 60 million have high blood pressure, 4.9 million have coronary heart disease, and more than 2 million have suffered a stroke. Also, the cost associated with cardiovascular disease is astronomical. In 1989 alone, this cost is estimated to be $88.2 billion in medical expenses and lost productivity. Total cardiovascular disease accounted for over 2 million years of potential life lost in 1985, ranking second behind injuries.

As alarming as these statistics may be, there are some positive trends. From 1976 to 1986, the age-adjusted death rate from heart attack fell by 27.9 percent and that from stroke declined by 40.2 percent. This decline is largely due to medical advances, healthier lifestyles, and control of risk factors such as cigarette smoking, elevated blood cholesterol levels, and hypertension. However, there is still a long way to go. Cardiovascular diseases and stroke remain this Nation's number one killer. In the United States, someone dies from cardiovascular disease every 32 seconds.

The AHA has always placed its major emphasis on disease prevention, investing heavily in scientific research. Since 1949, the AHA has invested more than $754 million in cardiovascular research. Over 30 percent of the AHA's yearly revenues are used to sponsor promising and sometimes pathbreaking scientific investigations. In 1989, the AHA expects to spend $63 million in research awards.

Our ability to combat cardiovascular disease correlates directly with the level and quality of overall support of basic and clinical research and prevention efforts. While the AHA continues to commit a larger portion of its resources toward research, we cannot have the desired impact, solely from our own investment, on the morbidity and mortality caused by cardiovascular diseases and stroke. Adequate funding of the Federal biomedical research effort is critical. Unfortunately, the Administration has proposed a reduction in funding for the VA MRS program in FY 1990.

The VA Medical Research Service (MRS) program's support for cardiovascular research makes up a small portion of the overall Federal research contribution in this area. However, the MRS plays an important role in cardiovascular research and we believe that it deserves the strong support of both the AHA and the Congress. In

1988, the MRS program expended approximately $18.4 million, or 10.2 percent of its budget, on cardiovascular research. While the primary purpose of the VA health care system, as a whole, is the provision of high quality health care services to eligible veterans, the research supported by the VA is part of the total biomedical research system in this country. Discoveries resulting from VA-supported research benefit science and this world's health as a whole.

Not only is the research supported by the VA an integral part of the overall biomedical research effort in this country, the VA-sponsored investigators provide significant core faculty support at major medical schools affiliated with VA institutions. The MRS program provides funds to VA-based faculty members (M.D.s or Ph.D.s) at various stages in their careers; for multi-center cooperative studies, a large portion of which are cardiovascular studies; and for research equipment. In addition, the presence of a VA research program aids universities in their recruitment efforts.

The MRS program is one of three areas in the VA Medical and Prosthetic Research program. The other research areas include rehabilitation research and health services research. Together, this small, but internationally recognized, highly competitive research program supports approximately 2,800 investigators at 132 VA centers located throughout the United States. The proposals funded by this program are "intramural" in nature, but are subject to the same type of scrutiny as are the National Institutes of Health (NIH) "extramural" research awards.

VA researchers include many nationally recognized, distinguished scientists and several Nobel Laureates. In the last few years, several VA investigators have been acknowledged for their work in the area of cardiovascular research. In 1987, Dr. Daniel O'Connor, of the San Diego VA Medical Center, was awarded the AHA's Harry Goldblatt Award for his achievements in the field of hypertension research. Also, in 1986, Dr. Brian B. Hoffman, of the Palo Alto VA Medical Center, received the AHA's prestigious Established Investigator Award for his work on regulation of blood vessels to adrenaline and noradrenaline, which dramatically effect the heart and circulation. Moreover, in 1987, Dr. Aaron J. Marcus, of the New York City VA Medical Center, received the annual VA William S. Middleton Award for his pioneering status of the mechanisms of blood clotting and intravascular thrombosis. In addition, Dr. Marcus has done work on natural inhibitors of clotting in the treatment of stroke and coronary artery disease.

The emphasis of the VA cardiovascular research is largely clinical in nature. In fact, the VA is a major contributor to this Nation's clinical research. Thus, the VA plays a unique role in the research community because of its ability to translate immediately basic research findings into the clinical practice setting.

The VA MRS program is unique in another aspect. Its support is limited to clinicians who are employed in VA facilities throughout the country, making the program intramural in nature. Although the number of applications has grown slightly over the last five years, decreases in funding or even slight increases to account for inflation are not sufficient to support all of the reviewed and approved VA research applications. In FY 1988, 83 percent of the VA applications were approved but only 47 percent of these were actually awarded because of the lack of available funds.

Examples of on-going cardiovascular research funded by the VA include studies in the following areas:

o Hypertension (chronically elevated blood pressure): A study to determine the mechanisms by which mineralocorticoids, a class of steroid hormones, produce hypertension. Findings from this mineralocorticoids hypertension model may increase understanding of the the control of blood pressure and may lead to new and improved treatments for hypertension, a major risk factor of cardiovascular disease and the most significant risk factor for stroke.

o Heart metabolism: Research to evaluate the role of circulating energy sources on heart metabolism. This investigation has shown, for the first time in humans, that free fatty acids play a major role in regulating the use of energy sources by the heart. Future studies in this area will include an examination of coronary heart disease patients and of an artery-obstructed animal model to determine whether treatment that enhances glucose usage can be correlated with improved heart function and recovery.

o Growth regulation of the adult heart: A study to determine how strain stimulates growth of an adult mammal's heart. Investigators are testing the hypothesis that sustained decrease in cardiac load results in a smaller heart and that an increase in cardiac load results in an enlarged heart. Findings have shown that both situtations lead to abnormalities of cardiac function.

Other areas of cardiovascular investigation include a study on the effects of decreased blood flow to the heart on the transportation of ions by the cell surface membrane, and an evaluation of the mechanisms in which immune cells that fight acute infection are activated during a heart attack.

The VA's ability to fund these and other important research projects is being jeopardized by the level of funds allocated to the MRS program. While the total dollars appropriated for medical research have increased since 1985 at an average annual rate of approximately six percent, there has, in fact, been a gradual decrease in terms of constant "1985 dollars." The total FY 1989 MRS budget of approximately $181.852 million represents less than 1.8 percent of the total VA medical care budget and less than 0.3 percent of Federal research appropriations.

The Administration's FY 1990 budget includes $168.921 million for the VA MRS, a 7.11 percent reduction in appropriated funding from FY 1989. Compared to a FY 1990 current services budget of approximately $188.852 million for the MRS program, the reduction is 11 percent. Also, the Administration's request for the MRS includes a decrease of 176 FTEE, 143 from investigator-initiated studies. These proposed reductions affect all components of the MRS program of concern to the AHA, including:

o Investigator-Initiated Studies: This program supports 1,849 investigators and constitutes 77 percent of the MRS budget. Under the President's budget, this program would be cut by 6.6 percent with a reduction of 143 FTEE.

o Cooperative Studies: Currently, this program supports 29 clinical trials. These studies, unique to the VA, provide a mechanism in which research on the effectiveness of diagnostic or therapeutic techniques can achieve statistically significant results by pooling data on patients from a number of VA hospitals. Proposals developed by teams of VA clinicians and biostatisticians are subsequently evaluated by the Cooperative Studies Evaluation Committee. Many landmark clinical trials in the cardiovascular field (e.g., studies in hypertension treatment and coronary artery bypass surgery) have been supported by the VA under this mechanism. The President's budget would require that this program mechanism be reduced by 3.5 percent.

o Career Development Awards: Currently, this program supports approximately 250 clinician scientists who spend the majority of their efforts on medical research. Applications for the several different types of career development awards are reviewed both locally and by the VA Central Office. Under this highly competitive program, only 35-40 percent of the approved applications can be funded. Under the Administration's budget, only currently approved career development awards would be funded.

The AHA believes that these proposed reductions are short-sighted in light of the fact that VA research in the area of cardiovascular disease represents an integral part of the overall scientific effort in this field. Moreover, the proposals will have a negative impact on the entire VA's Medical Research program.

Also, the proposed reductions in research personnel will have a negative impact on the VA's ability to administer and maintain a quality staff for its biomedical research program. This reduction will be especially severe in the MRS program, which is slated to receive a disproportionate number of the overall proposed reductions. In order to administer and oversee a successful research proposal program, the VA must be provided with necessary and proper resources to accomplish its mission. The AHA urges this Subcommittee to ensure maintenance of current staffing levels for the MRS program.

Moreover, the AHA believes that these proposed reductions in research personnel are short-sighted in light of the VA's requirement to prepare for future needs of veterans. The VA's planning models recognize that its aging patient population demands more care. By the year 2000, the percentage of veterans over 65 years of age will be about three times that of the general population, 38 percent and 13 percent, respectively.

For FY 1989, Congress had the wisdom to provide the VA MRS program with a 10.75 percent increase over its FY 1988 appropriation of $164.205 million. We applaud this Subcommittee's action. While the AHA is keenly aware of the need for fiscal restraint, we are concerned about the potential negative long-range effects on the health of this Nation if cutbacks in biomedical research are made in FY 1990.

The AHA recommends a FY 1990 appropriation of $215.3 million for the VA Medical Research Service program. An appropriation of this amount will allow for an overall increase of 18 percent over the FY 1989 appropriation for the biomedical research activities of the VA. This appropriation would only restore the MRS program to its FY 1985 level of effort. Our funding recommendation for the VA MRS is consistent with that of the "Friends of VA Medical Care and Health Research."

Specifically, an appropriation of $215.3 million would support approximately 26 cooperative studies and 1,840 projects, leaving many promising, approved research grant applications unfunded. These figures represent the same numbers funded in FY 1985. The AHA-recommended funding level would provide moderate growth in only three activities: 250 individual career development awards, compared to 200 in FY 1985; the Special Initiatives program, which targets areas of critical needs such as AIDS, spinal cord regeneration, geriatrics, alcoholism, and schizophrenia; and the purchase of high technology research equipment.

The AHA firmly believes that today's investment in biomedical research will lead to future returns including continued decreases in death rates from heart attack and stroke, reduced Federal outlays for hospital and long-term care expenses, a well-trained cadre of biomedical researchers, and a more healthy and productive society. An 18 percent increase for the VA MRS program would continue current research momentum in cardiovascular diseases within the VA and help to maintain the VA's vital role in the overall scientific effort in this field.

Thank you for your attention to our concerns and recommendation. I will be happy to answer any questions.

STATEMENT OF DR. JOHN LIPKIN, AMERICAN PSYCHIATRIC ASSOCIATION

Senator KERREY. The next witness is Mr. Lipkin.

Dr. LIPKIN. Good morning. I'm Dr. Lipkin, chief of staff at the Perry Point VA Medical Center, clinical associate professor of psychiatry at the University of Maryland, a member of the American Psychiatric Association's Committee on Veterans' Health Care.

We have submitted written testimony. I have a few other thoughts.

I've been actively involved in the treatment of hospitalized veterans, veterans with PTSD and aging veterans, for about 20 years.

As I'm sure you know, mental illness will affect at least 20 percent of the population at some time in their lives.

LIMITATIONS ON COVERAGE FOR MENTAL ILLNESS

Third party insurers and health maintenance organization coverage of mental illness is very restrictive and a lot of it has lifetime limits. Those limits are often below the levels of coverage for chronic medical and surgical conditions.

For these reasons, more veterans turn to VA for psychiatric care than for other conditions. As an example, nearly one-half of all veterans hospitalized for mental illness are hospitalized in the VA Medical Center. There are many areas of need in the VA for acute care and long-term care, for equipment, for research support.

As chief of staff, I am terribly worried about the changes that have been affecting care. Speaking for the American Psychiatric Association, I want to make three brief points.

First, the VA's shortage of psychiatrists threatens the quality of care in the future of psychiatric care.

Second, the opportunities for progress in psychiatric research depend on dollars and the time in scientific investigation of mental illness, great progress will occur.

It's important to point out, however, that we spend less per capita on psychiatric research than on many diseases which will affect far fewer citizens.

Finally, there will always be veterans who need high- quality treatment for psychiatric disorders. The capacity to treat them will depend on the availability of active programs in hospitals in the community.

These men and women need your support in order to maintain or improve the quality of care available.

The VA has increased the numbers of psychiatric patients treated and reduced the number of psychiatric beds annually for more than 20 years. This I think is an ominous trend.

Thank you for your attention.

Senator KERREY. Thank you.

[The statement follows:]

STATEMENT OF DR. JOHN LIPKIN

The following reflects a summary of the American Psychiatric Association's views and concerns regarding FY 1990 Appropriations for VA medical care and health research:

- The APA supports the "Friends of VA Medical Care and Health Research" FY 1990 recommended appropriation of $12.42 billion for medical care and $249.1 million for health research.
- The above figures reflect the need for additional monies to permit the VA to address the unmet needs of veterans suffering from substance abuse, AIDS (often related to I.V. substance abuse), combat-related PTSD, those who are homeless and suffer from chronic mental illness, and the aging veterans in need of long-term care for chronic mental illnesses. We ask that funding be provided to reopen recently closed alcoholism and drug treatment and research programs; ensure adequate treatment for AIDS patients; treat veterans suffering from PTSD; fully fund the McKinney Act for residential care for chronically mentally ill veterans; and provide for 50 additional geriatric fellowships in the VA for medical and psychiatric care of the aging veteran population.
- In addition, we request funding for scarce speciality pay for psychiatry in the VA, as requested in the VA Mental Health & Behavioral Sciences Service report requested by the Associate Deputy Chief Medical Director, in an effort to address the 15% vacancy rate for VA psychiatric physicians.
- We also request a total FY 1990 VA research budget of $249.1 million in response to the chronic underfunding of psychiatric research (which averages 17% of the total research support monies). Such funding would have a significant impact on the quality of care for the high percentage of veteran patients diagnosed with psychiatric disorders and enhance the VA's ability to attract and retain qualified personnel.

Mr. Chairman and Members of the Subcommittee, I am John Lipkin, M.D., Chief of Staff at the Perry Point, Maryland, VA Medical Center, Clinical Associate Professor of Psychiatry at the University of Maryland, and a member of the APA Committee on Veterans Administration Affairs. I am pleased to appear before the Subcommittee to represent the views and concerns of the American Psychiatric Association, a medical specialty society representing over 35,000 psychiatrists nationwide, regarding FY 1990 appropriations for VA medical care and health research.

The APA, a member of the "Friends of VA Medical Care and Health Research" (a coalition of 40 organizations and associations), concurs with their FY 1990 recommended appropriation of $12.42 billion for medical care and $249.1 million for health research.

As you are aware, the VA is facing a shortfall of over $600 million in FY '89. The Chief Medical Director has responded to this fiscal crisis by reducing services and closing specific programs, thereby denying treatment to thousands of needy veterans. President Reagan's budget contained no request for supplemental medical care funding for FY '89, and an inadequate $200 million increase over a documented insufficient level for FY '90. President Bush's budget proposes a "flexible freeze" on expenditures for VA health care, and if adopted, would result in a reduction of $200 million below the Reagan FY '90 request. To fund "current services" for medical care requires an appropriation of $12.02 billion.

As physicians and spokespersons for those who too often cannot speak for themselves, we hope to provide you with a greater understanding of how critical delivery of psychiatric care is to veterans and how inadequate funding levels place mentally ill veterans at risk.

The need to support more extensive VA funding of psychiatric care is reflected in the following data:

- In 1987, the VA provided 237,000 episodes of hospital care for psychiatric illness to 152,000 veterans. Ninety-three percent of all veterans discharged with a primary psychiatric diagnosis were either service-connected or eligible for inpatient care under Category A since their incomes are below $16,466.
- In 1987 and 1988, 50% of all patient visits to outpatient clinics were for mental health-related care needs.

In response to severe budget constraints, it is now, more than ever, critical that the VA reaffirm its mission to provide comprehensive psychiatric services to veteran patients who suffer from service connected illness, including, schizophrenia, post-traumatic-stress disorder (PTSD), Alzheimer's disease and other dementia, alcoholism and other substance abuse disorders, and depression. We can not permit further erosion of VA psychiatric services, which have traditionally been chronically understaffed and underfunded, and risk further erosion in quality of care.

Almost no one anticipates the need for services to diminish, and hence, the ability to provide care becomes even more essential. Let me share with you the last four years' experience with VA psychiatric patient workload. Since the implementation of the Resource Allocation Methodology (RAM) — the VA equivalent of hospital DRGs (Diagnosis Related Groupings) which, it is critical to recognize, Medicare did not apply to psychiatric hospitals or psychiatric units of general hospitals because the research data did not support psychiatric DRGs — VA Psychiatry has experienced a 21% increase in episodes of care, and a 13% increase in the number of unique individuals treated. By 1987, the percentage of discharges for individuals suffering dual diagnosis conditions involving a serious psychiatric disorder and an alcohol or substance abuse disorder exceeded 74%. Yet, despite the increased census, and an evidenced need for more complex treatment with a higher level of care, the proportion of VA funds distributed to psychiatry bed sections has declined.

In addition, the time to address the tremendous unmet needs of veterans suffering from substance abuse, AIDS (often related to I.V. substance abuse), and combat-related PTSD, as well as those who are homeless and suffer with chronic mental illness, and aging veterans in need of long-term care for chronic mental illness, is long overdue.

Consider the following:

- In FY 87, 57.5% of all psychiatric discharges from the VA listed alcoholism as either a primary or secondary diagnosis. If not treated successfully, these uninsured and/or service connected veterans will place a tremendous financial burden on the VA through high recidivism rates and expensive treatment for other complications of alcoholism. Yet, the VA has eliminated alcoholism treatment and research programs at eight facilities across the country, with a collective patient load of 4500 inpatient admissions and 8600 outpatient admissions per year.
- If the veteran who uses I.V. substances develops AIDS, he/she will be one of approximately 2400 new veteran-patients needing treatment in FY 90. The VA provides counseling and care to 7% of all AIDS patients in the U.S. and estimates total clinical costs for AIDS to be $164.9 million.
- The veteran suffering from PTSD currently costs the VA very little. The Research Triangle Institute's study reports that half of the male Vietnam theater veterans currently experiencing high levels of PTSD symptoms have never been seen by a mental health professional, and 87% have not been seen recently by any health professional concerning their symptoms.
- Until the enactment of The Stewart B. McKinney Act of 1988, which authorized

the appropriation of $15 million for FY 89 and FY 90 for contract residential care for chronically mentally ill veterans, very few homeless veterans were receiving care. In the first 14 months of the program, over 13,500 homeless veterans were contacted, 10,5000 received formal intake assessments, and 1350 were placed in psychiatric residential treatment. We support President Bush's recommendation for full funding of the McKinney Act.

o The number of aging WWII veterans, who suffer from chronic mental illnesses and require long-term care, continues to grow. Entitlements to these veterans, who are poor and/or service-connected, have increased over the years, requiring the VA to do more with fewer resources and imparing their ability to provide funds for desperately needed nursing homes and staff. Rationing of care is now a reality and the aging veteran is being shortchanged. We ask that funding for 50 additional geriatric fellowships in the VA be provided for geriatric medicine, particularly for psychiatry, in an effort to address the evidenced mental health needs of this specific population.

The quality of care for all psychiatric patients is being compromised by the VA's documented inability to recruit and retain qualified health care personnel. With the support of the VA Associate Deputy Chief Medical Director, the Mental Health & Behavioral Sciences Service recently conducted a field study in response to concerns over the increasing number of psychiatric physician vacancies and difficulties in the retention of psychiatrists. There are currently 1860.63 total psychiatric physician full-time employee equivalents (FTEEs). The survey of 160 VA Medical Centers documents a 14.59% vacancy rate for all psychiatric physicians. There are 269 FTEE vacancies, of which 29 are full-time Chief of Psychiatry vacancies, 189 are full-time staff vacancies and 50 are part-time staff vacancies.

The VA study cites, as major obstacles to recruitment and retention efforts, the attractiveness of competing salaries and fringe benefit packages. State facilities, which have experienced many of the same recruitment and retention difficulties, have responded to their crises by substantially increasing starting salaries. The VA now faces stiff competition from state salary levels as well as from the attractiveness of private practice. Competing employers offer the potential for private practice, better fringe benefit packages and lighter work loads.

We support the VA report's recommendations which call for salary increases for psychiatrists through the granting of scarce specialty status for psychiatry, allowing for renumerated outside activities, enhanced research opportunities, improved working conditions and reduced workloads, and we request appropriations to fund special pay rates.

Enhancing research activities in the VA also affects quality of care and the ability to attract and retain qualified personnel, by permitting opportunity for professional growth. Research can, and will, provide us insight to arrive at more effective treatments and services for patients and their families.

Despite Congress' 9% increase in research funds for FY '88, the medical research program has not recovered from reductions sustained between 1985 and 1988. We recommend a total FY '90 VA research budget of $249.1 million, consistent with the recommendations of "Friends of VA Medical Care and Health Research."

Given the high percentage of veteran patients diagnosed with psychiatric disorders, it is alarming that a mere 17% of research support monies were directed towards psychiatry in the first half of FY '87. In addition, the dollar amount for behavioral research represents less than 10% of the total budget. During the period between 1983 and 1986, 74% of all research grants received at the VA were approved, and 55% were funded. However, only 12% of the approved research grants were for behavioral science research, and of that figure, only 42% were approved and funded.

Research is on the threshold of a new understanding of the bases of major mental illnesses. For example, research on schizophrenia — a disease twice as common as Alzheimer's disease — has encompassed a broad spectrum of sciences — from the most molecular of the biological sciences to the broadest of the behavioral. Clues to etiology and treatment are being sought in the biochemistry of nerve cells as well as in the psychology of human personality; in methods for visualizing the brain, as well as in techniques to assess intellectual function; in the assessment of drug therapies, as well as in the evaluation of vocation rehabilitation programs.

The VA is currently conducting or supporting alcoholism research, considered critical and unique to the field. The New England Journal of Medicine recently published the findings of one such project, conducted at the Philadelphia VAMC, in conjunction with the University of Pennsylvania. Researchers concluded that outpatient detoxification is "an effective, safe, and low-cost treatment for patients with mild-to-moderate symptoms of alcohol withdrawal." This is just one example of the major contribution of VA research on the entire health care delivery system. The VA's elimination of alcoholism research may save money in the short-term, however, the potential for savings, indicative of the Philadelphia effort, proves the long-term value of research and dispels the merit of further cuts.

If steps are not taken to ensure adequate funding for delivery of psychiatric care in the VA medical system, health care delivery systems across the country will be faced with even greater influxes of patients suffering from psychiatric illnesses. State facilities are already at maximum capacity, struggling to cope with their own budget constraints. Those state mental health systems that have cooperated with the VA in an attempt to address the expanding need for services, cannot absorb any more of the burden.

We urge your support for adequate funding levels for veterans suffering from mental illness. They require and deserve the best quality health care available.

STATEMENT OF DR. JOHN A. KASTOR, ASSOCIATION OF PROFESSORS OF MEDICINE

Senator KERREY. Dr. Kastor, from the University of Maryland.

Dr. KASTOR. I'm John Kastor, representing the Association of Professors of Medicine. Our organization is the National Society of Academic Physicians, whose members are the chairmen of the Departments of Internal Medicine of each of 127 U.S. medical schools.

We are here today to present our views on the fiscal year 1990 appropriation for research and medical care of the Department of Veterans Affairs.

QUALITY AND QUANTITY OF CARE THREATENED

Unfortunately, the administration's 1990 budget for the medical department of the Veterans Affairs is far below what we believe to be necessary. Proposed cuts would deeply hurt the quality and quantity of care delivered to veterans in the veterans centers.

We've already noticed these effects. The Baltimore VA Medical Center with which we at Maryland are closely associated, beds have been closed, patients have been refused admission, the hospital can no longer keep up with the rapidly-changing technology trends.

Our VA medical center cannot even replace routine equipment which has reached the end of its lifespan.

Let me talk for a moment about the training of interns and residents at VA hospitals associated with medical schools.

The quality of these young doctors who are being recruited to work at such VA hospitals is very high. They are among the top graduates of medical schools that they have attended, and they are able to give highly competent care to VA patients under the supervision of experienced faculty members.

The administration's budget would reduce or drop by over 150 the number of these outstanding young physicians available to care for veterans at the Nation's VA hospitals.

Finally, I come to the area perhaps closest to my heart as an academic cardiologist: Research.

In the past, the VA hospitals have supported medical research very generously and important discoveries of great value come from this much admired research policy.

However, the administration's proposed budget reduces funding for research $13 million below this year's amount. That wonderful, mutually helpful relationship between research and patient care will be severely jeopardized if this proposed reduction is enacted.

The Veterans Administration hospitals, Mr. Chairman, which are associated with the medical schools, are, in effect, the Federal Government's own university hospitals.

The veterans receive the benefits of the latest developments in medical care because of the research programs which the Federal Government has created and supported in these institutions, at least in the past.

Specifically, we request that the Congress appropriate to the Department of the Veterans Affairs for 1990 $12.42 billion for medical care and $249.1 million for research.

We request that $215.3 million be assigned to medical research. Those of us in academic medical departments throughout the country want to continue caring for our veteran patients, training the doctors of the future, and conducting research at our VA hospitals as we have in the past.

We request from you the financial support to do so.

Thank you very much.

Senator KERREY. Thank you.

[The statement follows:]

STATEMENT OF DR. JOHN A. KASTOR

Mr. Chairman and Members of the Subcommittee:

The Association of Professors of Medicine (APM) is pleased to come before you today to present our views on FY 1990 funding for the medical care and research programs of the Department of Veterans Affairs (DVA).

The APM serves as the national representative for the Chairmen of the departments of medicine at our nation's 127 medical schools. As you are aware, 103 of these institutions are formally affiliated with 133 DVA Medical Centers (DVAMC); in these situations, the chairmen of the department of medicine and their faculty are heavily engaged in both patient care activities and the training of medical interns and residents at the affiliated DVAMC. In addition, many APM members and their faculty with joint appointments to the DVAMC and the medical school are awardees in the DVA's renowned research program. Thus, funding for medical care activities and DVA research is of great interest to the Association.

As in 1988, the APM is again very supportive of the recommendations of the coalition known as the Friends of VA Medical Care and Health Research. We believe the formation of this coalition and the thoroughness of their recommendations is evidence of the high level of concern among the academic medical, research and public health communities over the continued vitality of the DVA health care enterprise. We urge you and the members of the Subcommittee to give your full attention to the Friends of VA proposal when finalizing spending for the DVA for the coming fiscal year.

The APM would like to make a few general comments about the DVA medical care and research programs before giving our specific appropriations recommendations. The first concerns the DVA's unique place in our medical education enterprise, and the relationship of affiliated medical school departments to quality care for our nation's veterans. Internal Medicine and other specialty interns and residents participating in a graduate medical education (GME) program at a DVAMC are vital participants in the provision of patient care to veterans. Working together, residents and their attending physician supervisors -- who are faculty at the medical school -- offer superior medical care to veteran patients.

Second, the DVA research program is producing quality scientific investigation, as is evidenced by the numerous awards received by DVA investigators, as well as the very high number of proposed grants approved for funding through the peer review process. Unfortunately, under present funding levels, the Department can fund less than 50 percent of the grants eligible for support. The presence of a strong research program has been of enormous benefit to recruiting highly qualified clinicians to the DVA system, which has translated to a high quality of care for the DVA patient population.

Turning to specific recommendations for FY 1990 appropriations, the Association's first comment is to urge the Subcommittee to reject the levels of funding for DVA medical care and research proposed in the Bush budget. The Administration proposal for medical care activities of $10.74 billion represents an increase of only about one percent over FY 1989. It seems misguided to propose funding at a level that does not even keep pace with the general rate of inflation, let alone the medical market basket index, at a time when the DVA's deepening fiscal crisis is hurting the ability of some DVAMCs to deliver the health care services that their patients require.

The APM is particularly distressed with the proposed reduction of 55 FTEE medical residency positions called for in the Administration budget. Many of these residency positions are in primary care fields, such as internal medicine; training in these disciplines is particularly important to the aging DVA patient populations, as it is a precursor to advanced training in geriatrics, as well as the subspecialties of internal medicine (by whom a large percentage of afflictions associated with aging are treated).

The Administration request for medical research is even more disheartening than that for medical care, as it represents a decrease in funding from the current fiscal year. The requested FY 1990 level of funding of $197.3 million is $13 million below the FY 1989 level of $210.2 million; a reduction of this magnitude means that the DVA will be able to award between 365 and 400 fewer grants. The APM believes that if this proposal were implemented, there would be overall decline in the quality care delivered to veterans, as it would harm the ability to recruit quality physician scientists to the DVA system.

In urging you to reject the Administration proposals, the APM makes the following alternative funding recommendations for FY 1990:

- For the medical care account, the Association recommends $12.42 billion. Funding at this level would allow the DVA to continue programs generally at their FY 1989 level, while providing for modest growth in certain priority program areas such as care for AIDS patients and continuing education of DVA staff. The APM recommendation would also allow for the training of 30,700 medical residents -- approximately the same number as in academic year 1988-89.

- For the medical and prosthetic research account, the APM recommends $249.1 million, including $215.3 million for medical research. Funding at this level would simply restore the medical research service to its FY 1985 level of effort (1,840 projects), and continue very moderate growth for the rehabilitation and health services research efforts. Even at this level of research funding, a significant portion of approved applications would still go unfunded. The Association's recommendation allows for the expansion of the career development program to 250 individual awards. This program is especially valuable to the recruitment efforts of the DVA, as it funds highly qualified young investigators. This helps the DVA establish a cadre of dedicated research scientists, who, in turn, enhance the quality of the education and patient care efforts of the Department.

The APM thanks you for your time and attention in this matter. If the Association can be of further assistance in your deliberations or if you have questions regarding our testimony, please contact Mr. Jim Terwilliger, APM's Director of Government Relations, at (202) 857-1158.

STATEMENT OF DR. JOHN DENNIS, ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Senator **Kerrey**. The final witness is Dr. Dennis.

Dr. **Dennis**. Good morning, Senator Kerrey.

I'm Dr. John Dennis, dean of the University of Maryland School of Medicine. I'm here today on behalf of the Association of American Medical Colleges and the Friends of the VA for Medical Care and Health Research.

VA medical care and health research programs have received inadequate funding in the past years, making a supplemental appropriation necessary. As a result, their ability to provide quality care has been compromised and threatens the symbiotic agreement between the VA and our Nation's medical schools.

PROBLEMS AT BALTIMORE AND PERRY POINT VA MEDICAL CENTER

At the Baltimore and Perry Point VA Medical Center, we have experienced many problems as a result of inadequate funding. For example, our projected activation budget for the new hospital in Baltimore, even though it has been increased recently, is inadequate for quality patient care. For 2 years, care has deteriorated as a result of inadequate resources.

Baltimore veterans with degenerative joint disease, for example, are kept on pain medication for several months because of inadequate resources, while they await hip and knee replacement surgery.

This has had a tremendous effect on the morale of our VA physicians and staff.

It is paradoxical to note that this budget belt-tightening is eroding the system while demands on the system rise. The veterans population is aging quickly and requiring more care. At the Baltimore VA Hospital, we have looked at those veterans under the age of 60 and those over the age of 60, and we know that those over the age of 60 have six times the number of outpatient visits per year as those under the age of 60.

Broad constraints on the Nation's health care system have brought many veterans to the VA for care who previously did not rely upon them.

In the immediate past, the system was able to sustain the pressure of these funding constraints and still meet its responsibilities.

Over time, the shortfall has stretched VA beyond reasonable limits and forced reorganization. And in some cases, restriction of services.

CREATION OF ETHICAL AND MORAL CONSIDERATIONS

The result of working with too limited resources has brought into play ethical and moral considerations, particularly those of timeliness and access to care. If forced to continue operating with insufficient funding, the VA will be in danger of further impairment of services, eroding the standards of medical care and threatening the relationship between universities and VA medical centers.

As was stated previously, the research program has also suffered as a result of these fiscal constraints. The Baltimore VA Hospital has been designated as one of the six VA-funded AIDS research centers.

However, researchers have been unable to perform critical AIDS-related experiments due to inadequate facilities and lack of funding to establish a safe working environment.

This is a tremendous opportunity loss. Veterans and Americans as a whole have benefitted from the results of VA-funded research programs. For example, the CT scanner and studies show that a low dose of aspirin reduces the incidence of heart attack in males are among the many important discoveries made by VA research.

VA research is a highly-leveraged program which yields tremendous results. Friends of the VA have recommended a fiscal year 1990 appropriation of $12.4 billion for medical care, and $249 million for health research. This will enable the VA to accommodate its $600 million budget deficit shortfall, meet current demands, and begin to prepare for future challenges.

Funding below this level would only exacerbate the downward trending of quality.

Thank you, Mr. Chairman, for the opportunity to testify before you this morning.

Senator KERREY. Thank you. And we thank all of the panelists.

[The statement follows:]

STATEMENT OF DR. JOHN DENNIS

Good morning. I am Dr. John Dennis, Vice President for Academic Affairs and Dean of the University of Maryland School of Medicine in Baltimore. I am here today on behalf of my university, as well as the Association of American Medical Colleges (AAMC) and the Friends of the VA Medical Care and Health Research. The AAMC serves as the national voice for the country's 127 medical schools and 440 major teaching hospitals. Seventy-seven of those 440 teaching hospitals are VA facilities; in addition, over 100 of the medical schools share an affiliation with one or more VA medical centers. The AAMC understands and strongly supports the VA's medical care and health research programs. The Friends of the VA is a group of 70 academic and health organizations that unified to express our mutual concern about the impact inadequate funding has had on the VA's ability to maintain a quality health care program.

In FY-88, the VA provided over 20 million outpatient visits and over 1 million hospital inpatient episodes, making it the largest health care system in the nation, perhaps the world. It is a national treasure worth saving. The system must be protected to fulfill the promise made to the men and women who fought for our country in time of greatest need.

As you are well aware, the VA medical care and health research programs have received inadequate funding in past years, making a supplemental appropriation necessary. Inadequate funding has deteriorated the quality of the system and also threatens the success of some of the symbiotic agreements between the VA and our nation's medical schools. I am sure you have heard numerous anecdotes and statistics on this issue.

In Baltimore, we have experienced many problems as a result of inadequate funding. For example, a badly needed new facility was constructed, but I am concerned about whether the funds allocated for equipment and personnel is adequate to make it fully operational. Our projected total hospital equipment budget for next year is less than the amount needed to equip the radiology service alone. Patient care has been directly compromised as a result of inadequate resources. Baltimore veterans with degenerative joint disease are kept on pain medication for several months while they await hip and knee replacement surgery. This certainly is not the optimal way to deliver medical care. My colleagues and I are concerned about the ramifications of fiscal constraints in a clinical setting.

Over the last decade, the medical care appropriation has not included a real dollar increase. At the same time, the VA has extended the amount of care provided. Since 1980, the VA workload has expanded by 60,000 inpatient treatments, 5 million outpatient visits, and 38,000 nursing home stays -- without an increase in real dollar spending. In other words, the VA has definitely provided "more bang for the buck".

There is no doubt that over the past decade, the VA has been doing more with less. We have reached a breaking point. The system can no longer sustain the effects of funding shortfalls without dangerous and often irreparable damage. Not only do we see instances of infrastructure decay and increased waits for services, I have observed a marked difference in staff morale. At a time when professional health providers, particularly nurses and technicians are in great demand and short supply, morale and funding has worked against the VA's efforts to recruit and retain our most valuable resource, committed and outstanding professional staff.

It is paradoxical to note that this budget "belt-tightening" is deteriorating the system at the same time as demands on the system rise. First, data show a dramatic trend in the demographics of the veteran population; specifically, the veteran population is aging quickly. By the end of the next decade, over sixty percent of veterans will be over age 65. As the population ages, they require more care, more complex care, and more costly care. Second, we are entering an era where broad constraints on the nation's health care system have brought many veterans to the VA for care who previously did not rely on the system. We cannot allow the VA to decline as needs increase.

In the immediate past, the system was able to sustain the pressure of these funding constraints and still meet its responsibilities. Over time, this shortfall has stretched the VA beyond reasonable limits and forced reorganization, and, in some cases restriction, of services. The results of working with too limited resources have brought into play ethical and moral considerations, such as timeliness and access to care. If forced to continue operating with insufficient funding, the VA will be in danger of impairing services, eroding the standards of medical care, and threatening the relationship between academic health centers and VA medical centers. This is cause for concern because the university affiliations serve a vital quality assurance function by bringing into the VA system top health professionals who provide patient care and conduct research. Moreover, the medical school affiliations are an important recruitment source. Many individuals who train in the VA, spend their careers in the VA.

I urge this Subcommittee to appropriate a level of funding that will satisfy the VA's needs, precluding the need for later supplemental funding. Given the present demands and status of the VA health care system, I believe funding of over $12 billion is needed in FY-90 to maintain current services and accommodate the $600 million shortfall which faces the system today. I support the Friends of the VA FY-90 budget proposal recommending $12.42 billion for medical care and $249.1 million for health research.

The research program has also suffered as a result of fiscal constraints. The Baltimore VA has been designated as one of six VA-funded AIDS research centers. However, researchers have been unable to perform critical HIV and AIDS related experiments due to inadequate facilities and lack of funding to establish a safe work environment. This is a tremendous opportunity loss for veterans and the population as a whole. Only through continued research will the medical community ever begin to effectively treat and prevent this fatal disease.

Similar scenarios are heard nationwide. As illustrated by the chart on page 12, between 1985 and 1988, the number of merit review awards to individual VA investigators fell from 722 to 385 -- cut by almost half in three years. We were extremely encouraged last year when Congress provided funding to increase the number of awards to 500. Continued commitment of resources to this important program will be necessary in the coming years to regain the momentum of a few years ago.

Veterans and Americans as a whole have benefited from the results of the VA research program. The CT scanner and a study that revealed that low doses of aspirin can reduce the incidence of heart attack in males are among the important discoveries made by VA researchers. In addition, the research programs offer veterans the opportunity to participate in drug trials and therapies involving the newest advances in medicine. On pages 7 - 9 of the Friends of the VA booklet, several veterans describe the direct benefit they experienced as research patients. For example, the wife of a veteran treated for Alzheimer's disease at the Bronx VA explains how a research program involving an experimental drug has helped delay his mental deterioration.

I believe an appropriation for medical care and health research of $12.67 billion in FY-90 would enable the VA to maintain balance and stability in the current system and to begin to prepare for future challenges. Funding below this level would exacerbate the downward trend in quality.

Thank you for the opportunity to testify this morning. I will be happy to respond to any questions.

PANEL NO. 6

Senator KERREY. The next panel is Mr. Larry Mattson, Dr. Curtis Tompkins, Dr. Jerry Grey, and Mr. Glenn Mason.

Dr. Mattson.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

STATEMENT OF LARRY MATTSON, THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Mr. MATTSON. Thank you, Senator Kerrey. I'm Larry Mattson, chairman of the American Society of Mechanical Engineers, Aerospace Division. Because of the immense variety of applications of mechanical engineering, we are 20 percent of the ASME's 116,000 membership who is directly or indirectly involved in aerospace technology.

I am pleased to have the opportunity to present the views of the ASME task force on civil space policy and the fiscal year 1990 budget request of the National Aeronautics and Space Administration.

We have focused our review of the budget requests on a number of areas of the space program where we believe improvements are warranted and are primarily interested in pointing out the need for a consistent space policy. Specifically, these areas include space policy, the shuttle, space science, research and technology, and NASA manpower.

With regard to national space policy, the task force command legislative initiative of Congress to reestablish a national space council as a step in this direction, we hope the new administration will take this opportunity to give more visibility to civil space policy and to revitalize and coordinate the planning process for the national space policy announced in February of last year.

To summarize the major points of our written statement, the task force emphasizes that proper planning in the form of a well-coordinated and well-executed space policy is as critical to the future of NASA's civil space program as the budgets allocated.

The task force urges Congress and the administration to formulate long-range goals that expand man's exploration of space.

Overall, the task force agrees with the administration's fiscal year 1990 budget priorities, while pointing out the following: First, a new shuttle booster should be developed after it is determined which of the two alternatives will best serve the Nation.

Second, the space station is the cornerstone of the Nation's space, science, and exploration programs, and will allow us to apply our space technology and provide numerous returns of commercial and scientific investments.

Third, low-cost access to space is an essential ingredient to overall national space policy, and a key element in maintaining a positive U.S. trade balance surplus in the aerospace industry.

Fourth, space science is an important part of our national space policy. New starts in funding should be at a level which reflects long-range planning and international cooperation.

Fifth, NASA's aging work force coupled with its need to stimulate academic interest in advanced space technology makes it imperative that NASA focus its efforts on educating and training engineers and scientists in space science to prevent deterioration of NASA's capable work force.

The fiscal year 1990 budget should be the start of a well-planned effort to strengthen NASA's research and development, international cooperation. Probably at no time in its past has NASA had more promising opportunities and challenges. The task force hopes this committee will recognize the value of NASA's past contributions and the benefits of its continued health and expansion.

Thank you for your attention, Mr. Chairman.

Senator KERREY. Thank you, Mr. Mattson.

[The statement follows:]

STATEMENT OF LARRY MATTSON

INTRODUCTION

The Task Force on Civilian Space Policy of the American Society of Mechanical Engineers (ASME) is pleased to present its views on the FY 1990 budget request of the National Aeronautics and Space Administration (NASA). This statement represents the considered judgement of the Task Force, a group of experts in the aerospace field, rather than an official position of ASME.

ASME is a nonprofit, educational, scientific and charitable society founded over 100 years ago. Membership in ASME exceeds 116,400 mechanical engineers, including 19,100 students. Because of the immense variety of applications for mechanical engineering, over twenty percent of our membership is directly or indirectly involved in aerospace technologies.

In summary, The Task Force emphasizes that proper planning, in the form of a well-coordinated and well-executed space policy, is as critical to the future of NASA's civilian space programs as the dollars allocated. The Task Force urges Congress and the Administration to formulate long-range goals that expand manned exploration of space. The Space Station should be the primary initiative which establishes our nation's permanent presence in space. Overall, the Task Force agrees with the Administration's FY 1990 budget priorities while noting:

o Spare parts and supplier problems may continue to hamper shuttle availability through the 1990s unless active procurement of spares is begun;

o A new shuttle booster should be developed after it is determined which of the alternatives will best serve the nation;

o The space station is the cornerstone of the nation's space science and exploration programs and will allow us to apply our space technology and provide numerous returns to U.S. commercial and scientific investments;

o Low cost access to space is an essential ingredient in overall National Space Policy and a key element in maintaining a positive U.S. trade surplus in the aerospace industry;

o Space science is an important part of our National Space Policy. New starts and funding should be at a level which reflects long-range planning and international cooperation;

o Privatization risks should be minimized where possible to protect industry from the hazards of shifting policies and priorities;

o NASA's aging workforce, coupled with its need to stimulate academic interest in advanced space technology, makes it imperative that NASA focus its efforts on educating and training engineers and scientists in space science to prevent deterioration of NASA's capable workforce.

The Task Force is pleased with the Administration's proposed budget increase for FY 1990, from $10.9 billion to $13.3 billion, about one percent of the Federal budget. We note that much of the increase is intended for the space station and the space shuttle programs, accounting for two-thirds of the total. Additional areas of special note in the FY 1990 budget request include increased funding for Expendable Launch Vehicles up from $85 million to $169 million, and $342 million for NASA facilities refurbishment, replacement, and modernization. This last item is very important to maintain continuity within the nation's strategic research and development (R&D) effort.

The Task Force is concerned, however, that NASA's research and development programs may not be at a sufficient level to continue our nation's preeminent position in civilian space activities. New starts are a very small portion of the budget, accounting for less than one percent. In addition, budgeted increases in the space research and technology programs, which include the Civil Space Techology Initiative and the Pathfinder Program, do not meet original projections for the scope of these efforts.

We have focused our review of the NASA budget request on a number of areas of the space program where we believe improvements are warranted. In many instances, "improvement" does not necessarily translate into "more money," although there is a case to be made for increased funding in several areas. Our Task Force is primarily interested in pointing out the need for a consistent space policy. We believe proper planning in a long-range context and proper execution of these plans, can turnaround the erosion of our lead in space. Thus our comments will focus on the trends which we detect in the budgetary process, and highlight areas where a national policy is essential to successful execution of NASA's civilian programs.

NATIONAL SPACE POLICY

The Task Force applauds the legislative initiative of the 100th Congress to recreate the National Space Policy Council. We hope the new Administration will take this opportunity to give more visibility to Civil Space Policy and to revitalize and coordinate the planning process begun with the National Space Policy announced in February of last year. In this regard, the Task Force is concerned that the appropriate planning is not being reflected in the budget submissions to Congress which are required by law to be multi-year.

SPACE SHUTTLE

There is enormous pride throughout the nation in the return of our shuttle fleet to operational status. However, the job of providing a fleet of resilient reusable vehicles to meet the space transportation needs of this country has not been finished. The accelerated rate of launches anticipated for 1990 will stretch the current shuttle resources beyond their capacity in the forseeable future.

In terms of planning, the time is now to start providing for sufficient spares of long-lead shuttle hardware including structural components to minimize unscheduled down time. The proposed budget provides only $20 million in spares for the shuttle and offers no alternatives to the problems experienced last year when critical parts were not available to support the schedule. The Space Transportation System has been reduced to scavenging hardware from the existing fleet to support schedules, and further dependency on this type of activity could result in reduced probability of schedule recovery and launch resiliency.

In recognition of this nation's need to ensure that the space shuttle continues to offer the safest possible means of transportation for its crew, NASA is initiating the Advanced Solid Rocket Motor program. An alternative to the ASRM, a Liquid Rocket Booster, the LRB, has recently been studied by NASA. The LRB has the potential for even greater crew safety with the added benefits of cleaner environmental products with no attendent ammonium perchlorate shortfalls, improved performance and higher mission reliability. Furthermore, there are indications that such an LRB would be of value to the DoD fleet of ELVs, leading to the prospect of a cooperative development between the two agencies with the potential of satisfying the nation's need for a robust launch system. Before proceeding with the ASRM program that was created under the pressure of the post-Challenger environment, we believe it to be in the national interest to first more carefully assess which of the two systems would best serve this nation.

SPACE STATION

We were pleased to note the much needed support provided to the Space Station Freedom program as reflected in the FY 1990 NASA budget. This increase of $1 billion puts the Space Station on track for full operational capability by the mid 1990's. In order to remain on track, however, it is essential that the program receives consistent and adequate funding. We strongly urge Congress to provide the needed funding now, in FY 1990 and in future years.

America's past accomplishments in space have been impressive and have received worldwide recognition. However, the time has come when we must consolidate and apply the many past gains that we have made in the areas of space technology and exploration. Space Station Freedom provides that needed consolidation and ability to utilize our technology and expertise. For example, the Space Station and its associated man-tended free-flyers provides the node from which we can look back to Planet Earth to seek solutions to the many problems that currently plague our lands, oceans, and atmosphere. It will allow us to monitor our environment and service Earth Resources satellites dedicated to improving conditions on Earth.

Space Station Freedom will also provide a platform from which we can develop the technologies needed for the future expansion of man's presence in space. A facility in low Earth orbit is the proper environment to examine long duration space exposure. The economics of space transportation from low earth orbit to establish a Lunar Base or Manned Mars Mission are vastly improved over direct ascent from earth. Eventually, the spin-offs associated with artificial intelligence, robotics, and numerous advanced technologies will have many applications to benefit every man, woman and child in this country. The Space Station will provide America with a permanent manned presence in space and the servicing facilities required for future missions under our National Space Policy in addition to providing a link to to virtually all of our future goals in space as we move into the 21st century.

NATIONAL AEROSPACE PLANE
We support the need for the National Aerospace Plane (NASP), a joint NASA/DoD program because we believe this program to be vital to our nation's competitiveness in aerospace in the 21st century. Conceptually, a future NASP would be able to cruise within the upper atmosphere at hypersonic speeds or ascend directly to orbit. It's potential capability to fly from the U.S. to Japan in about two hours could enhance commercial transport. As a space launch vehicle operating from conventional runways, the fully reusable and single stage to orbit aspects of NASP are believed to produce very large reductions in the cost to place payloads into orbit. Technology spin-offs for the future can be comparable to those of the Apollo and Shuttle programs. Today, aerospace is one industry that has a positive trade surplus for the U.S. -- offsetting 1988's deficit by an estimated $17.8 billion.

SPACE SCIENCE
FY 1990 will be an important year for NASA in planetary exploration. Among the new programs planned for FY 1990 are the CRAF/Cassini missions. 1990 will also see the launching of Galileo, Ulysses, the Hubble Space Telescope, and the Gamma Ray Observatory. In addition, the Advanced X-Ray Astrophysics Facility (AXAF), a new start in FY 1989, is planned to proceed to a full scale development phase. The AXAF will complement the other great observatories we will have in Earth orbit and will provide us with insight into the origin of the universe. The Comet Rendezvous Asteroid Flyby (CRAF/Cassini) mission, will provide excellent insight into the evolution of life and the solar system while helping to maintain U.S. leadership in the field of planetary science. The use of a pair of Mariner/Mark II spacecraft with a high degree of commonality will decrease the project cost by over $500 million when compared to the cost of building each spacecraft individually, and the contribution of The European Space Agency will reduce the mission cost further. The Task Force supports these Space Science programs and encourages the Committee to assure funding for these programs now and throughout their duration.

SPACE RESEARCH AND TECHNOLOGY
The Task Force strongly encourages the Committee to increase funding for space research and technology programs to a level commensurate with the importance of this area. For instance, Pathfinder, a program which investigates four technologies: surface exploration, in-space operations, humans in space and space transfers is being severely underfunded. These technologies are critical to our understanding of the risks inherent in space exploration and overcoming those risks. Essentially, Pathfinder is formulating options and alternatives for human exploration of the solar system. Initial funding for this task was originally estimated at $100-200 million, rather than the FY 1990 budget of $47 million.

PRIVATIZATION INITIATIVES
In line with forthcoming observations, the Task Force notes the increased emphasis placed on commercialization of certain programs and facilities formerly budgeted by NASA. These proposals for privatization include:

- The Advanced Solid Rocket Motor (ASRM) production facility
- The Neutral Buoyancy Facility
- The Space Station Payload Processing Facility
- An Observational Instrument Laboratory at the Jet Propulsion Laboratory
- The Extended Duration Orbiter capability for the Space Shuttle
- The Flight Telerobotic Servicer for the Space Station

These facilities and programs are proposed to be financed by private industry or organizations at an estimated savings of $208 million to NASA. The Task Force supports policies which make good economic sense to NASA, and supports commercialization of space through the development of facilities such as the

Commercially Developed Space Facility (CDSF) and Spacelab. However, the Task Force wishes to emphasize that the commercial marketplace for civilian space programs is still in its infancy. These programs will entail high economic or commercial risks which industry may be reluctant to assume, especially for programs whose out-year funding is not assured.

Over the past five years we have asked the Administration and Congress to urge NASA to increase participation of the private sector in space ventures. Among some of the private projects we have encouraged was a privately financed orbiter which now has received some NASA support. Some private ventures approved by NASA include the McDonnell Douglas biological processing project and the Fairchild Leasecraft, which have now been cancelled. After the January 1986 Challenger accident, many U.S. companies dealing with space went out of business or came very close to going into Chapter 11. In short, it appears that private companies desiring to participate in space with NASA are incurring great risk. We hope that the new thrust in the privatization of space will include some method where private industry is protected from the risk of pursuing a federally encouraged effort only to have support dropped at a later date. Space is still a risky marketplace in which to do business, and it will require government assistance until these businesses are somewhat self-supporting.

EXPENDABLE LAUNCH VEHICLES

We support the expanded utilization of ELVs for commercial payloads which free up the availability of the shuttle for special missions. Alternate means for launching all payloads via the mixed fleet concept makes good sense and good policy to assure that the nation's launch requirements are met. With the advent of several commercially available unmanned launch systems, the government has at its disposal the ability to plan for contingencies with launch resiliency. It should be noted, however, that the development costs for these vehicles have been amortized by the government over the last several decades and the costs to develop new vehicles on a commercial basis without government assistance, is prohibitively high.

TECHNICAL MANPOWER AND ENGINEERING EDUCATION

NASA's budget calls for adding 700 equivalent people to their staff in FY 1990, and we believe this to be a positive sign that our nation's space and aeronautics program will continue to grow. However, the breakdown in the 700 has not been announced. Are these scientists and engineers, or technicians, or computer scientists, or secretarial and other administrative personnel?

We are greatly concerned that with the diminishing number of U.S. students studying engineering (as well as the hard physical sciences) there will be a future shortage of key technical personnel. Currently over 50 percent of the U.S. engineering doctoral students are foreign born. Unless more U.S. students are attracted to science and engineering this country will soon begin experiencing extreme difficulties supplying the necessary top engineering talent to staff organizations like NASA. Added to this manpower shortage is the problem of an aging workforce; more than 45 percent of the NASA workforce is eligible for retirement in the next two years. Therefore, we encourage the Committee to more aggressively address the technical manpower problem.

We enthusiastically endorse the establishment of the National Space Grant College and Fellowship program which seeks to broaden the base of universities involved in aerospace science and offers fellowships to train professionals in aerospace science. We also recommend that:

1) The ammount of the stipend and number of engineering recipients in NASA's Graduate Student Researchers Program be increased. The stipend in this program has been fixed for a number of years; and
2) The number of NASA Summer Faculty Fellowships in engineering be increased. This program has been very successful in familarizing engineering educators with advanced space technology.

The FY 1990 budget should be the start of a well-planned effort to strengthen NASA in R&D, international cooperation, and new ideas. Probably no time in its past has NASA had more promising opportunities and challenges, and the Task Force hopes this Committee will recognize the value of NASA's past contributions and the benefits of its continued health and expansion.

NATIONAL SCIENCE FOUNDATION

STATEMENT OF DR. CURTIS J. TOMPKINS, AMERICAN ASSOCIATION OF ENGINEERING SOCIETIES

Senator **KERREY**. We'll next hear from Dr. Tompkins.

Dr. **TOMPKINS**. I'm Curt Tompkins, dean of engineering at West Virginia University. I'm here today in my role as secretary-treasurer of the American Association of Engineering Societies, which represent over 500,000 engineers in the United States.

I'm pleased to present some of our views on the National Science Foundation budget. AAES is a multidisciplinary organization of engineering societies dedicated to advancing the knowledge, understanding, and practice of engineering in the public interest.

We strongly support the National Science Foundation fiscal year 1990 budget request of $2.15 billion, including $211 million for the engineering directorate. And we endorse the administration's plan to double the NSF budget by 1993.

NSF's budget supports important basic and focused engineering research in needed engineering education programs that are vital for the United States long-term economic competitiveness.

We thank the committee for your past support of NSF and encourage Congress to approve this budget request, and sustain a high level of support for NSF in the years to come.

ENGINEERING DIRECTORATE

In urging your support for the budget requests, I would like to focus on the engineering directorate as an example of why the Foundation's request is an important national investment in both research and education.

The engineering directorate at NSF supports research into the basic principles which underlie technical processes and systems and of the man-made world.

The research now being supported could lead to a host of commercially important technological advances. For example, NSF-supported work on the design of very large-scale integrated circuits will lead to the next generation of computers, while research into the automation and manufacturing processes, an area where we have been falling behind our international competitors, should have broad applications into the aerospace, chemical, and electronics industries.

Researchers supported by NSF are developing tiny microscale machines that will be used in such applications as medical surgery and missions to outer space. Other researchers are designing remotely-operated robots that will function in hazardous environments, such as the inside of nuclear power plants or toxic waste dumps.

While this type of NSF-supported engineering research may lead directly to valuable applications, we believe it is also important that NSF maintain its traditional broad-based support for engineering research.

The Foundation is the only Federal agency whose purpose is to fund engineering research across all fields, including chemical processing and infrastructure that may not be supported by mission agencies or show obvious short-term payoffs.

NEED TO UPDATE ENGINEERING EDUCATION CURRICULUM

Along with its research role, NSF is helping educate the next generation of engineers. One of the most pressing needs in engineering education today is updating the curriculum. In fiscal year 1988, the engineering and education directorates of NSF initiated a jointly-funded program in the engineering curriculum.

It has proved so successful that the engineering directorate plans to triple the support for the curriculum program from $2 to $6 million in fiscal year 1990.

Another major issue in the engineering education is continuing shortage of faculty. One of the most effective ways of convincing the most academically able undergraduates to go on to graduate study and individual faculty careers is engineering research experience. Through its research experiences for undergraduates' programs, the engineering directorate in fiscal year expects to involve more than 900 undergraduate engineering students in faculty directed research projects.

At the graduate level, the directorate estimates that, in fiscal year 1990 funding, it would be able to support more than 3,700 engineering graduate students through the research grants to the engineering faculty.

In order to encourage more women to become engineering faculty next year, the engineering and education directorates are together adding 80 new graduate fellowships for women in engineering.

In conclusion, we believe that, in light of the valuable research and educational programs supported through the National Science Foundation, that you should provide the NSF with its full budget request. It is an important investment in the Nation's technological future.

Thank you for this opportunity to present the AAES views. With your permission, I would also like to submit a written statement for the committee's files in support of fiscal year 1990 NASA budget request.

Senator **Kerrey**. Certainly.

[The statement follows:]

STATEMENT OF DR. CURTIS J. TOMPKINS

Mr. Chairman and Members of the Subcommittee.

My name is Curtis J. Tompkins. I serve as Secretary-Treasurer of the American Association of Engineering Societies (AAES), and I am pleased to present its views on the FY 1990 budget request for the National Aeronautics and Space Administration (NASA).

The American Association of Engineering Societies is a multidisciplinary organization of engineering societies dedicated to advancing the knowledge, understanding, and practice of engineering in the public interest. The member societies of AAES, which represent over half a million engineers in industry, government, and education, include:

- American Society of Civil Engineers
- American Institute of Mining, Metallurgical and Petroleum Engineers
- American Society of Mechanical Engineers
- Institute of Electrical and Electronics Engineers
- American Society for Engineering Education
- National Institute of Ceramic Engineers
- Institute of Industrial Engineers
- Society of Women Engineers
- Society of Fire Protection Engineers
- American Institute of Plant Engineers
- American Nuclear Society
- American Indian Science and Engineering Society

AAES supports the proposed increase in NASA's FY 1990 budget from $10.9 billion to $13.4 billion as a necessary step to preserve U.S. leadership in aeronautics and space. This increase presents an opportunity to reverse the practice of recent years in which NASA's activities and plans have become contingent on the annual federal budget cycle and fluctuating government attitudes toward private space enterprises. This has produced a program cobbled together by compromise and shaped by its struggle for survival.

To sustain essential long term support for NASA programs, AAES strongly recommends that Congress and the Administration place their highest priority on setting clear long-range national goals for our space program. A visionary National Space Policy which articulates these goals is necessary to build a lasting national consensus on the U.S. role in space. That policy must be implemented through straight-forward guidelines supported by a detailed multi-year plan to avoid the wasteful stops and starts that characterize the current space program. Much is at stake: many of the scientific and technological breakthroughs in the last two decades can be traced to the space program. A floundering space program means that the momentum for continued discovery and innovation will be lost and that the creative and constructive work of scientists and engineering in aerospace and related fields will be undermined.

The establishment of goals and planning milestones for manned space flight and the exploration of space is one essential element of an effective National Space Policy. Maintaining a balance between NASA's aeronautics and space programs as well as sustaining long-term budgeting for specific programs is a second key element. Proper planning also requires a commitment to improve the commercial competitiveness of U.S. programs as well as a willingness to engage in discussions with other countries to ensure that the use of space is carefully regulated.

With a strong statement of policy goals and directions, NASA can begin to reverse the consequences of past failures to provide adequate long-term funding for space programs. Specific program areas which are vital to NASA's mission and which have suffered in recent years include space transportation, the space station, science, research and technology, space communications, and NASA's technical manpower and facilities needs.

SPACE TRANSPORTATION

The return of the space shuttle to operational status gives rise to great pride and optimism. AAES believes, however, that a four-orbiter fleet is simply not adequate to carry out the well-balanced space program that our national interest requires. An accelerated launch schedule for 1990 to address a backlog of military and commercial payloads coupled with the anticipated transportation requirements for space-station deployment may stretch current shuttle resources beyond their capacity. It should be noted that over-reliance on an undersized shuttle fleet was one of the contributory causes of the Challenger disaster and subsequent suspension of flight operations.

Accordingly, AAES urges an expansion of efforts to establish a mixed fleet of expendable and reusable launch vehicles, both government and commercial, that will meet the growing U.S. space transportation needs and counter increasing foreign competition. Overreliance on the shuttle can be alleviated by expanded utilization of Expendable Launch Vehicles (ELVs) for military payloads and payloads that do not require a manned presence. AAES firmly recommends that NASA continues to work closely with the Department of Defense and private contractors in this area to ensure that the U.S. meets all of its launch commitments.

To ensure that the four-orbiter shuttle fleet remains fully operational, additional funding should be provided for purchase of spare shuttle parts. The $20 million budgeted for spares in FY 1990 does not adequately anticipate the potential for unscheduled repairs.

SPACE STATION

We are pleased to endorse increases in the FY 1990 NASA budget intended to put Space Station Freedom on track for full operational capability by the mid 1990's and call on Congress and the administration to continue its commitment to this goal by providing adequate and consistent funding in years to come.

As a common link in various plans to achieve long-term goals in space, Space Station Freedom is an integral element of a balanced space program. The space station will support facilities for scientific research and technology development not possible on Earth as well as provide a platform for careful study of the problems which afflict our global environment. It provides a mechanism to promote the commercialization of space and encourage private sector investment essential to restoring U.S. economic competitiveness. Space Station Freedom is also a vital stepping stone for the exploration and eventual colonization of space.

In order to realize these benefits, it is imperative that the space station enjoy a continuity of national commitment. Absent this commitment, the space station is certain to suffer the same pattern of indecision, underfunding, and costly delays which afflicted planning and deployment of the space shuttle in the seventies. To sustain such a commitment, we must establish definitive objectives for a balanced civilian space program which clearly articulate the space station's purpose in terms that will inspire lasting public support.

SPACE SCIENCE

The FY 1990 space science budget funds several programs vital for the exploration of our solar system including Galileo, Ulysses, the Hubble Space Telescope and the Gamma Ray Observatory. The Comet Rendezvous Asteroid Flyby (CRAF)/Cassini missions are a new start in FY 1990 that will advance our knowledge of the origins of our solar system and will give insight on the chemical evolution of life. We support these space science programs and urge the Committee to assure funding for these programs in the future.

SPACE RESEARCH AND TECHNOLOGY

AAES supports increases in the NASA budget for space research and technology designed to revitalize and expand NASA's technology base. These expenditures, which represent a very small percentage of the total NASA budget, are particularly well taken because they will ultimately produce a sharp reduction in the costs of space exploration and provide major returns for the commercial space sector. In addition to funding for R&T base programs, key elements of the space research and technology budget include the Civilian Space Technology Initiative and the Pathfinder program.

The Civil Space Technology Initiative (CSTI) program begun in FY 88 emphasizes technology for efficient and reliable transportation to, and operations in, low Earth orbit as well as supporting science missions in Earth orbit. AAES is encouraged by the proposed increase of $22.7 million for CSTI in FY 90.

The Pathfinder program was initiated in FY 89 and is dedicated to study options and develop critically needed technologies for the manned and unmanned exploration of the solar system. NASA has estimated that Pathfinder will require $750 million in funding from 1989-1993 in order to effectively accomplish its missions. As the new kid on the block, Pathfinder has not been adequate funded. This pattern is continued in the FY 1990 budget request of $52.7 million for Pathfinder which represents a reduction of approximately $47 million from NASA's FY 1990 request for $100 million.

We urge Congress and the Administration to look beyond short-term budgetary pressures to recognize both the need for these critical new technologies and the long term savings that will result from timely investments in NASA's technology base. An increase in funding for the Pathfinder program in FY 90 is one logical first step.

SPACE COMMUNICATIONS

The United States' position of world leadership in supplying commercial communications satellites is threatened as foreign firms, with significant government support, develop increasingly competitive technologies. NASA has worked to preserve the U.S. edge in space communications technology through the Advanced Communications Technology Satellite (ACTS) program. ACTS will make practical simultaneous high capacity communications transmissions at higher frequencies (20-30 GHz band) than previously possible. In recent years, however, the ACTS program has become an annual victim of budget crunching and survives today only because Congress has recognized its important commercial and technological implications.

The long-range advantages of the ACTS program are clear. ACTS technology will enable new commercial services (computer-to-computer communications, electronic mail and fund transfers & HDTV broadcasting for example) that are necessary to preserve the competitiveness of the U.S. telecommunications industry. It is unrealistic to expect the private sector to make the necessary and substantial investments toward developing this technology until after it has been advanced to the proof-of-concept stage. AAES, therefore, recommends that the ACTS program be funded to its successful completion including $61.4 million requested by NASA for FY 1990. Congress should also consider additional funding for follow-up study and experimentation with ACTS to determine how this new technology can be best utilized. The ACTS program staff has estimated that a five year budget augmentation of $19.5 million beginning with $4.5 million in FY 1990 is adequate for this effort.

After completion of the ACTS program, NASA must continue to play a leading role in the research and development of new and high-risk communications technologies. The composition of the U.S. telecommunications industry has changed. Large corporate monopolies have given way to a smaller, highly competitive companies who lack the resources to invest in expensive research and development programs and who are prevented by U.S. antitrust laws from collectively funding R&D initiatives. NASA must perform this essential R&D role by developing and transferring new space communications technologies to the commercial sector for systems development, application and marketing.

NASA'S TECHNICAL MANPOWER AND FACILITIES NEEDS

AAES is pleased to note that NASA's FY 1990 budget calls for the addition of 700 equivalent staff. New science and engineering staff bodes well for the continued growth of our nation's space and aeronautics program and is essential in light of the fact that more than 45 percent of the NASA workforce is eligible for retirement in the next two years.

In the longer term, unless more U.S. students are attracted to engineering and the sciences, NASA and other organizations will soon begin to experience difficulty in recruiting top engineering talent. For that reason, we believe that some priority should be given in the NASA FY 1990 budget for educational programs that anticipate its future technical manpower needs. Specifically, we support the establishment of the National Space Grant College and Fellowship program and recommend increased support for engineering participants in NASA's Graduate Student Researcher Program and Summer Faculty Fellowships.

AAES also supports the $342 million request for refurbishment and modernization of NASA facilities which are important components of the nation's long term research and development effort.

CONCLUSION

The declaration of a set of national goals for our space program is needed. Such a declaration is necessary to provide a clear basis for national consensus over the years to come. Strong leadership by the Administration and Congress is necessary to build the type of national commitment that will make these goals a reality.

AAES believes that with clearly defined goals and appropriate budgetary support for program elements, a balanced space program will yield important benefits to the nation through --

- new public and commercial services
- increased scientific knowledge
- advancement of the national technology base

A balanced and sustained program will also ensure United States leadership in space in years to come.

Thank you for this opportunity to present the views of the American Association of Engineering Societies on the FY 1990 budget request for the National Aeronautics and Space Administration.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

STATEMENT OF DR. JERRY GREY, AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS

Senator Kerrey. The next witness is Dr. Grey.

Dr. Grey. Thank you, Mr. Chairman. I'm Jerry Grey, Director of Science and Technology Policy for the American Institute of Aeronautics and Astronautics. We have 43,000 members, all of whom are involved in activities related directly to the NASA budget.

I'm going to speak very briefly on a few key points in our full statement. On our space portion of the NASA budget, Dr. Norris Krone, with me, is the chairman of our aeronautics subcommittee. He'll speak even more briefly on the aeronautics portion.

CIVIL SPACE PROGRAM

The Civil Space Program is essential to the Nation's economy and national security. Investments in that program are investments in America. They create the new revenues needed to support other Federal expenditures. Other nations have become increasingly aware of this and have escalated their space presence accordingly.

We of course recognize the present budget environment and we suggest three guidelines for dealing with it.

First, do not under any conditions allow support for the technology-based decay. That's part of everything that we do.

Second, complete current programs once committed on time and on budget. Stretch-outs are always costly and must be avoided.

Finally, do not cut up-front costs, such as development, if those cuts increase overall program life cycle costs.

The administration's proposed budget is the minimum needed for a balanced Civil Space Program. It's already a bare bones budget. There is simply no fat. The only way to cut it is to eliminate entire programs.

The biggest target for such cuts is space station freedom. But the space station is the key to every long- term Civil Space Program that's been proposed.

In keeping with our guidelines, now that we've made the commitment to develop the space station, we must get on with it. Its investment will be repaid many times over any economical, social and political benefits it brings. Stretching it out to reduce current year budgets has already added to its life cycle cost. It must now be completed on time and on budget. We cannot, in all good conscience, save a few bucks today at the cost of many times that amount to those who follow us.

Space technology development, a broad balance science program and on-time/on-budget completion of the space station along with the requisite space transportation capability are the foundations for all of our space programs.

I hope you will champion in the Congress the urgency of sustaining the new administration's strong budgetary support for these critical areas.

Dr. Krone will now speak on aeronautics.

Dr. **Krone**. Thank you.

We've been concerned for a number of years about the low percentage of the NASA budget that goes to aeronautics, especially in terms of the place that aeronautics plays in our international trade balance and the favorable impact it has.

HIGH-SPEED CIVIL TRANSPORT PROGRAMS

This year, there is a new initiative on high-speed civil transport programs. The emphasis of that program is to address the environmental issues that are involved in that. We consider those environmental issues as basically challenges, challenges to be overcome.

For sure, I think it would be a disaster if we are not the ones to build the next high-speed civil transport. The National Aerospace Program, the Aerospace Plane Program, we do support, but that's not a substitute for those technologies needed to produce an economic high-speed transport.

To support the rotocraft efforts, in particular, we would support the completion and development of the V22. That vehicle could be the forerunner of a very important civil airplane in the national transportation picture.

In summary, we believe that the research into aeronautics is a pure investment in the future of this country.

Thank you.

Senator **Kerrey**. Thank you.

[The statement follows:]

Joint Statement of Dr. Jerry Grey and Norris Krone

INTRODUCTION

The American Institute of Aeronautics and Astronautics (AIAA) is a nonprofit professional society dedicated to advancing the arts, sciences, and technology of aeronautics and astronautics and to promoting the professionalism of those engaged in these pursuits. We have a membership of over 43,000 drawn from all levels of American industry, academia, private research organizations, and government as well as from numerous nations abroad.

The U.S. civil space program is an essential element in the maintenance and growth of this nation's economy and national security and the quality of life of its citizens. Investments in that program are investments in America, and despite the urgent need to reduce federal deficits they must be made. Future returns on those investments will create the new revenues needed to support necessary federal expenditures. The advent of a new administration offers us a unique opportunity both to consolidate our past successes and forge a new, vibrant U.S. civil space program.

First on the agenda is a national commitment to U.S. goals in space. We do not need any more studies; a number of excellent ones have been conducted and are available. The AIAA has contributed to this process by setting forth three broad goals in a recent position paper: Expand our understanding of the Earth and the universe; extend human presence beyond Earth orbit to explore the Solar System; and create a profitable space industry.

What is needed now is a national commitment to these (or similar) goals, and a firm slate of objectives designed to achieve them, along with commensurate long-term program and budget commitments.

We recognize, of course, the budget environment this Subcommittee faces. In the pursuit of the civil space goals we have proposed, therefore, we have suggested three guidelines for dealing with that environment. They are not new—we offered them to you in our testimony last year—but we believe they are worth repeating: Do not allow support for the technology base to decay; complete current programs, once committed, on time and on budget. Stretchouts are always costly and must be avoided; and do not cut up-front costs (e.g., development) if such costs increase overall program life-cycle cost.

We believe the Administration's fiscal year 1990 budget proposal is, for the most part, consistent with achievement of the goals we have espoused. However, it is the minimum budget required for doing so. Reducing it, despite strong deficit-reduction pressures, would seriously compromise our ability to pursue an acceptably balanced U.S. civil space program. Our specific comments on the budget proposal are as follows:

Access to Space.—Creation of a single national space transportation program is essential. We need assured, low-cost reliable access to space for both human crews and unmanned payloads. The mixed fleet, fortunately, is now official policy, but it needs to be implemented in order to reach its objective. Decisions are needed very soon on the Shuttle's evolution, and these decisions must be integrated with the next-generation transportation development, currently designated the Advanced Launch System (ALS). It is also necessary to encourage our still-budding commercial space transportation industry, and to make sure that transportation requirements for Space Station Freedom are met.

Space Station Freedom.—The space station is essential to every long-term civil space plan proposed in the past two decades. In keeping with our above-stated guidelines, now that we have made the commitment to develop the space station we must get on with it. As President Kennedy said when he proposed the Apollo program, "If we are to go halfway, better not to go at all, unless we are prepared to bear the burden to make it successful." Those words are most appropriate to the space station program today. We have already made the decision to proceed with it; the space station should be brought on line at the earliest possible date. Although it will require a significant fraction of NASA funding during the next decade and will therefore be a prime target for spending cuts in the constrained budget environment of the coming years, the costs of building, deploying, and operating Space Station Freedom will be repaid many times over through the economic, social, and political benefits it will provide to this country. Stretching it out to reduce current-year budgets has already added to its life-cycle cost; it must now be completed on time and on budget.

Technology.—It is all too easy to postpone spending on the development of future capabilities, but, as our guidelines state, this temptation must be strongly resisted. Our space technology bank has been depleted and must be replenished. Of NASA's two new technology programs, the Civil Space Technology Initiative (CSTI) which deals with nearer-term requirements, appears budgetarily healthy. But Pathfinder, whose purpose is to advance the technologies needed for our longer-term space exploration goals, has suffered. Not only is the current budget proposal inadequate, but we hope you will also seek restoration of the previous year's reduction from the original plan, plus a much-needed supplement to the budget of the Office of Exploration for its excellent activities. Without the requisite technologies, plans for any long-term exploration of the Solar System become no more than idle dreams.

Science.—The Space Science Board's long-term plan cannot be faulted, but its fulfillment requires consistent, multi-year commitments. The new start proposed this year—Comet Rendezvous Asteroid Flyby (CRAF)/Cassini—is particularly critical, not only for its exciting scientific promise but for its unique economic, international, and management features. The critical timing of these missions should also be noted; if we are to pursue them at all, we have no margin for procrastination.

The CRAF/Cassini missions, incidentally—and even more forcefully the upcoming Galileo flight to Jupiter—underscore the serious state of our space launch situation. It is truly deplorable that we must rely on devious and intricate (although brilliant) gravity-assist maneuvers to conduct these missions, adding years to their duration, instead of the fast, direct trajectories that would be offered by a properly capable launch vehicle family.

Commercial Programs.—There has been much rhetoric—as well as a number of proposals that range from the practical to the visionary—on commercial space development. The AIAA has identified six potential areas for such activity: communications, Earth observations, space processing (including research foreground-based manufacturing), life sciences, transportation, and ground and orbital services, and has proposed a slate of government actions to encourage their development. A comprehensive paper on this subject is currently being reviewed by the AIAA for release; if and when that release is approved by our Board of Directors, I will be pleased to provide copies to the Subcommittee and to brief your staff on its content.

Education.—Although often neglected in the urgency of the budget approval process, science and engineering education are the props that uphold our civil space program and, indeed, the entire economy of our ever more technocratic society. There is a crying need for a major upgrade of our science education in the U.S., and the strong interest engendered in our youth by the civil space program can serve as an important lever in that process.

Conclusion.—Of all the subjects I have covered, three stand out this year as being most essential to the space future of the nation: technology development, the pursuit of a broad but balanced science program, and development of Space Station Freedom. These programs, along with the transportation capability needed to carry them out, are the underpinnings of all our space goals. I hope your subcommittee will champion in the Congress the urgency of sustaining the new administration's strong budgetary support for these critical areas and, indeed, will seek some growth in those areas whose budgets we believe to be still somewhat deficient.

If there is any way the AIAA can help in that regard, please call on us.

AERONAUTICS

For the last few years the AIAA has expressed its concern about the government's commitment to programs that maintain U.S. leadership in aeronautics. Although government resources allocated to the development of aeronautical technology have been considerable, the funding levels allocated to NASA are not commensurate with either the enormous free world aeronautics market of the future, estimated to be more than $550 billion over the next ten years, or with the national security need for maintaining a clear lead in military aircraft performance.

The 1988 positive balance of trade for aerospace was a record $17.8 billion. Although our exports have grown since 1983 from approximately $15.3 billion to $22.75 billion (in constant 1982 dollars—a 49 percent increase), during the same period our imports grew from approximately $3.3 billion to $7.7 billion—a huge 133 percent increase. The ratio of imports to exports since 1983 grew from 15 percent to 34 percent. Moreover, this adverse trend occurred during a period of a weakening dollar. Significant elements in this growth of imports were foreign sales in civil helicopters and general aviation. The key to maintaining our world leadership position in aeronautics, both in the near term and in the long-term, is research and technology.

Although the increased fiscal year 1990 budget for aeronautics reflects a growing recognition of the importance of aeronautical research and technology to the health of the nation's economy, the amount is not sufficient for adequate development of U.S. aeronautics. Of the total $13.275 billion requested for NASA in fiscal year 1990, only $860 million (less than 6.5 percent) is allocated for aeronautics, of which only $462.8 million is for basic research and development activities. Even with the $127 million programmed for the National Aerospace Plane (NASP), aeronautics represents only 7.2 percent of the total NASA budget.

A key element of the NASA program is a new initiative, the high speed civil transport (HCST). The AIAA strongly endorses the NASA high-speed research effort in aeronautics. Worldwide pressure for the development of an economically viable high-speed transport over the next few years is growing rapidly. If the U.S. does not make a vigorous commitment to pursuing this objective, we could forfeit considerable economic potential and lose our present leading position in the world's civil aviation industry.

Environmental considerations, the major emphasis of the 1990 HSCT program, are an important factor in the overall design requirements of the aircraft. They will have a large influence on the total program cost and, therefore, on the final decision to proceed with HSCT development. Advancing the technology base will lower the total cost of the fleet, and it is only a matter of time before those costs and the economics of the market reach a "critical mass" and prompt a decision to initiate a prototype design. We emphasize that this decision, while based on technical and analytical judgments, will involve elements of uncertainty as well.

The keys to winning the international competition for an economically viable HSCT are the technology base and the design ingenuity that can be brought to bear on the program. The sonic boom, airport noise and ozone depletion must be addressed, and NASA is correct in conducting research and analysis in these important areas. These considerations will produce design constraints on the aircraft, but they should not be viewed as barriers—hurdles to be overcome would be a better description. Overcoming them, however, will require increased effort and funding support in related technologies, primarily aerodynamics, propulsion, and materials. These technologies can provide design solutions for the environmental problems while enhancing the economic viability of the aircraft.

In conclusion, the AIAA vigorously supports the proposed increases in the NASA fiscal year 1990 aeronautics budget, especially the strong effort to lay the technology groundwork for an advanced supersonic transport aircraft. We particularly endorse stronger efforts in the aerodynamics, materials, and propulsion technology areas, which can close the economic gap between subsonic and supersonic flight. We also recommend increases in the NASA technical staff and improvements in NASA wind tunnels.

We appreciate this opportunity to express our views on the fiscal year 1990 budget and will be pleased to answer any questions you may have.

STATEMENT OF GLENN M. MASON, SPACE SCIENCE WORKING GROUP

Senator Kerrey. The next witness is Mr. Mason.

Mr. Mason. Mr. Chairman, thank you. I'm Glenn Mason, associate professor of physics at the University of Maryland, speaking on behalf of the Space Science Working Group of the Association of American Universities, on behalf of the NASA budget in the Space/Science Office.

I'd like to make an opening remark on what we feel are important roles that NASA and space science plays in keeping with many of the early remarks this morning.

INSPIRATIONAL ROLE OF NASA

That is, as the role of an inspiration to our Nation, the role of NASA in improving the country's ecological prowess is well-stated. It addresses such long-term problems as the decline in the ozone layer and the global warming. There are many technical features. But I think, if we look ahead at the year coming up in NASA and in space science, we can see another role. That is, in engineering feats and technical feats and scientific feats that will stimulate the Nation.

For example, in August, the Voyager will send back pictures of the planet Neptune. We have launched the Magellan, which, in a year, will send back radar images of the surface of Venus. We've advanced the Hubble Space Telescope, that will go off in a year.

I feel it will be tremendously exciting. These are the kind of things that can inspire our people and ignite the interest of school children and others in a science and engineering career.

I think many of the earlier witnesses this morning pointed to a need for this kind of activity.

OFFICE OF SPACE SCIENCE BUDGET

I'd like now to make some comments on the Office of Space Science 1990 budget. We in the Space Science Working Group generally are very positive about this budget; we support it. We particularly commend the continued orderly development of the global geospace science program and the x-ray facility.

We also applaud the initiatives of the Explorer Program and the procurement of expendable launch vehicles for assured access to space.

We also give our very strong support for the Cassini Probe, the probes, the dual probe that will follow, and watch its culma turn on as it flames toward the Sun and will drop probes into Saturn's moons, to study the atmosphere and the surface.

Generally, the budget is very tight this year in the Space Science Office. There's approximately a $160 million increase; $100 million of that was for programs in place, the balance then being for new initiatives.

We are worried about some things that will be cut from the budget, the cancellation of the Store Gravity Probe Program, which we think is an important program. We are concerned about the delay of the Earth Probe Series. We're concerned about the deletion of an item we support, the U.S. participation in international missions.

We recognize though that if the budget is decreased that the only things that will be done by the Office of Space Science is to cancel further programs rather than stretching out the ones in place.

We would ask that the committee support the budget and, if possible, add the funds and restore some of the small initiatives.

Thank you.

Senator KERREY. Thank you very much.

And thanks to all of you on the panel for your presentations.

[The statement follows:]

STATEMENT OF GLENN M. MASON

SUMMARY

With the proposed FY 1990 budget, NASA will continue its implementation of a long-term plan that will return this nation's program in space science to one of vision and vitality. The plan remains responsive to the recommendations of NASA and NAS scientific advisory committees. The FY 1990 budget continues to aim for balance among support for ongoing programs, diversification of the launch vehicle fleet for space science missions, increased support for research and analysis, technology development, and new initiatives in life sciences and solar system exploration. With modest and carefully targeted additions to the space science program, this budget will constitute a major step toward assuring a fully balanced program of space science and applications and will accelerate American efforts to regain leadership in space. At the very least, we request approval of the Space Science and Applications budget as submitted by President Bush. Hard choices have already been made and squeezes have been effected in order to provide for new missions. A major cut (or a restoration of a program without funds) would result in a drastic setback to the space science program.

Mr. Chairman, Members of the Subcommittee, thank you for this opportunity to testify on the subject of NASA's Space and Earth sciences program. My name is Glenn M. Mason, and I am an Associate Professor of Physics at the University of Maryland. I am speaking here today as a member of the Steering Committee of the Space Science Working Group (SSWG) of the Association of American Universities. I am testifying on behalf of the Association of American Universities and the National Association of State Universities and Land-Grant Colleges, whose members represent most of the major research universities in the United States.

After the prolonged hiatus in the U.S. space program, the next 12 months will initiate a dazzling return to exciting accomplishments for the space sciences. Two weeks ago NASA deployed Magellan, the first U.S. planetary mission in more than a decade, to map the surface of Venus. In close succession will be the launches of the Cosmic Background Explorer, the Galileo mission to Jupiter and its satellites, and the first two of the Great Observatory series: the Hubble Space Telescope and the Gamma Ray Observatory. In August, Voyager 2, launched 12 years ago and continuing to yield important data, will send humankind the first spacecraft data from Neptune, presently the most distant planet from the sun.

Poised as we are on the threshold of a new chapter of discovery for the U.S. space sciences, it is timely to restate the rationale for a vigorous national civilian space program. In the context of this rationale, the SSWG would like to offer its view of the FY 1990 NASA budget before you.

A VIGOROUS SPACE PROGRAM AND NATIONAL PRIORITIES

As an element of national policy, a strong and active space program provides a highly visible demonstration of this nation's scientific and technological prowess. At an intellectual level, space science epitomizes our innate inquisitiveness about our environment and our place in the cosmos. At a technological level, space presents profound challenges that drive industrial creativity. At an emotional level, space offers the unique opportunity for all of us to experience the thrill of exploration of an expanding frontier. The U.S. space program must achieve a balance among these perspectives, which calls, in turn, for a balance between science and applications, between manned and unmanned activities in space, and between infrastructure and new initiatives.

As the scientific exploration of space moves outward to distant planets and galaxies, the growing public concern over the fate of our own planet underscores the crucial role of space science for understanding the workings of Earth. With issues such as the deterioration of the ozone layer and secular global warming drawing accelerated worldwide attention, the space science community will bear an increasing responsibility to provide the technical context for political decisions at national and international levels. Our national space program must continue to seek the new data necessary to provide this context.

A robust space science program also can help address another pressing national priority–the need to reverse the declining interest and skill in science and mathematics in elementary school children. Almost daily we read of a new study showing that the math and science skills of our young students lag far behind those of other countries. It is essential to strengthen those national programs that capture the scientific and technical imagination of our population. Our space program has been, and can continue to serve as, a catalyst in this area. One need only look at the continued large crowds at the National Air and Space Museum, public fascination with discoveries of a new supernova or the rings of Uranus, and the consistently high turnouts to view the space shuttle launches and landings to recognize the power of space exploration to drive the curiosity of child and adult alike.

Mr. Chairman, for over a decade universities have witnessed a steady decline in the number of U.S. graduate students entering such basic fields as Physics. A vigorous national space program can help reverse trends such as this by igniting the curiosity that will attract many students into the fields of science and engineering. Some of these graduates will continue their careers in space science research and will provide the backbone of the space program in the next century. However, our experience at the University of Maryland shows that a large fraction will work in other areas which make use of many of the skills gained in space research; thus, the space science research effort for them has provided training which will be put to use in other important areas.

THE PROPOSED FY 1990 NASA BUDGET

I would now like to focus on the proposed FY 1990 NASA budget in the context of how responsive it is to the various objectives of the space program. The SSWG commends NASA and President Bush for submitting a FY 1990 budget which advances several areas of the space program of importance to the university space science community. We are heartened by the continued program development in the recent major new starts for AXAF and Global Geospace Science. This orderly implementation of the Office of Space Science and Applications' (OSSA) Strategic Plan gives our best assurance for recapturing U.S. leadership in space science. Of special importance to the university space science community are the new initiatives in the balloon and suborbital rocket programs and the augmentation of the Explorer line to fund the new Small Explorer missions. These relatively modest programs are of an ideal size for strong university participation and have time scales commensurate with the training of graduate students and the career development of young faculty. We particularly applaud the procurement of expendable launch vehicles which will provide the U.S. space science program with frequent and assured access to space.

The SSWG strongly endorses the proposed new start for the CRAF/Cassini mission and the essential increases in the research and analysis (R&A) components of the OSSA budget. The CRAF mission will provide the first long-term study of a comet, including in situ analysis of material thought to be little altered from the earliest beginnings of the solar system. The Cassini mission, to be carried out in cooperation with the European Space Agency, will give us in-depth observations of the atmosphere, magnetosphere, rings, and moons of Saturn, as well as chemical analysis of the thick atmosphere of its intriguing, haze-shrouded moon, Titan. Both missions, coupled with other "new starts" on line in the Strategic Plan, will serve to maintain a vigorous program of U.S. solar system exploration well into the next century.

The increases in the R&A components of the OSSA budget reverse a long erosion of support for basic research, analysis, and management of data from past missions, and advanced technology development – all essential ingredients of the efficient planning for the next generation of activities in space. The increases are particularly welcome in the space life sciences, which bore a disproportionate share of the budget cuts in FY 1989. Programs which had been originally slated for the current year, including development of a centrifuge facility, and planning for initiatives in space biology and extended duration crew operations, can finally begin in FY 1990. Indeed, the R&A programs are the lifeblood of university space science in its role of attracting and training the next generation of engineers and scientists. We also commend NASA for continuing its support of the NASA Graduate Researchers Program, which funds 245 new and continuing awards to outstanding students pursuing career interests in space-related fields of study.

The overall FY 1990 NASA request is $13.3 billion, a 22% increase over FY 1989, while OSSA's portion is slated for a 9% increase, from $1,830 million to $1,995 million. Given the tight constraints on the federal budget, we view this budget submission as a serious commitment from the Administration that leadership in space is an important policy priority. A close analysis of the OSSA portion of the budget, however, shows that it is extremely tight, with little or no flexibility for unanticipated events or opportunities. The missions operations and data analysis budgets, for instance, show large increases in FY 1990, but these increases will principally support the missions to be launched in the next 12 months. Funds to support currently operational spacecraft are dwindling despite opportunities for measurement of new phenomena, particularly in the space physics field. Moreover, the SSWG is distressed about several aspects of the budget as submitted.

Mr. Chairman, as the spokesman today for the primary university-based policy group concerned with NASA, I would like to raise our concern about proposed cancellation of the Shuttle Test of Relativity Experiment (STORE) program at Stanford University. This program has heretofore been a model for a NASA-university partnership directed toward achieving a technologically challenging and scientifically fundamental goal. However, NASA, for macro-economic reasons, has proposed "zeroing" this program in the FY 1990 budget. The SSWG considers this to be a serious setback for university-based space science efforts, and we request that Congress find a mechanism for restoring STORE by adding $25M to the OSSA request for this program.

Two other initiatives, modest in cost but large in importance, were also not included in the budget request. First, the initiation of the Earth Probe spacecraft series was omitted. The first Earth Probe would monitor the temporal and spatial variations in the Earth's ozone layer. I need hardly emphasize that the need for the ozone mapper is serious given mounting concern over the ozone depletion problem. Candidates for later Earth Probe spacecraft in the series would monitor ocean color, map the Earth's geopotential fields, and the measure global rainfall. These are all key elements of a coordinated Mission to Planet Earth. Also missing from the FY 1990 budget is a program to support U.S. experiments on international missions. This jeopardizes unique opportunities for low-cost U.S. participation on foreign missions, including a powerful Soviet X-ray telescope.

Finally, because of tightness in the budget, the addition or restitution of major programs, such as the Advanced Communications Technology Satellite, without the corresponding addition of resources, would severely damage the carefully crafted OSSA Strategic Plan and the orderly accomplishment of ongoing programs. The impact on other elements of the OSSA budget could be very significant.

Mr. Chairman, I believe that NASA's space science program should be viewed in the context of a topic being widely discussed throughout the science community and of particular concern to Congress and this Committee: the need to have an accepted process for setting scientific priorities. This discussion is the result of the fact that the cost of conducting leading-edge science in every discipline exceeds available resources. This truism has forced policy-makers to choose between funding fewer programs at adequate funding levels or pulling along a greater number of programs by their bootstraps. It is in this context that I would like to commend the work that NASA has done in the form of the OSSA Strategic Plan. Under the leadership of NASA Associate Administrator for Science and Applications, Lennard Fisk, NASA's science program has made substantial progress toward establishing far-sighted and balanced priorities for our space science program. I can tell you that, as a practicing scientist, the stability and predictability that this provides the entire community is most welcome.

Mr. Chairman,we should not lose sight of the need for balancing the space science program with the rest of NASA's program. In order to avoid repeating mistakes learned from the shuttle program, this Committee decided that one way to maintain a balance between hardware development and science is to mandate that at least 20% of NASA's R&D and space flight budgets be allocated to space science programs. This sentiment was reflected in the FY 1988 Appropriations bill for NASA, which stated, "... the conferees note that the Agency is committed to maintaining funding for science and applications at not less than 20% of total NASA resources. Although to date NASA has honored this commitment, the conferees are concerned that further budget constraints could negatively impact unmanned activities." (H.J. Res. 395: Conference Report 100-408, page 856.) Congress and NASA have concurred with this approach. This policy helps ensure that space science, the basis of America's future in space, will not be asked to assume the burden of cost over-runs or administrative planning errors in other parts of the space program.

The SSWG is concerned that the proposed budget for Space Science and Applications may be below the minimal level of support necessary to make the most effective scientific use of the nation's scarce space missions. By submitting a budget for OSSA which is less than the 20% level, NASA, in effect, undermines the policy established by the Congress to guarantee the availability of funds sufficient to maintain the minimally necessary level of research support, including payload flight opportunities. While the SSWG keenly recognizes the strong fiscal constraints under which the FY 1990 budget is crafted, we nonetheless urge Congress to restore the appropriate balance to our nation's civil space program. Specifically, a return of OSSA to the 20% level would permit the restoration of STORE and the initiation of the Earth Probes series, would enhance international scientific cooperation in space exploration, and would provide needed increases to mission operations and data analysis budgets.

Thank you again for the opportunity to present this testimony. I would be pleased to answer any questions.

BIOGRAPHICAL SKETCH:

Glenn M. Mason

Glenn M. Mason is Associate Professor of Physics at the University of Maryland, where he is on the faculty of the Department of Physics & Astronomy, and the Institute for Physical Science and Technology. He has B.A. and Ph.D. degrees, respectively, from Harvard University and the University of Chicago. His research interests include space plasma physics and cosmic rays; he is currently an investigator in the NASA Space Physics Division, and on NASA Explorer program missions. He is currently Vice Chairman of the NASA Space Physics Advisory Council, and is a member of the Steering Committee of the Space Science Working Group of the Association of American Universities.

PANEL NO. 7

Senator **KERREY**. The next panel is Mr. Ron Kokinda, Dr. Richard Holt, Dr. June Scobee, Joe Myers, and Mary Ellen Fise.

The first witness is Mr. Kokinda. Is he here?

[No response.]

Senator **KERREY**. Well, then, Dr. Holt.

STATEMENT OF DR. G. RICHARD HOLT, AMERICAN ACADEMY OF OTOLARYNOGOLOGY—HEAD AND NECK SURGERY, INC.

LIFE SCIENCES BUDGET REQUEST

Dr. **HOLT**. Senator Kerrey, I'm Richard Holt, professor and chairman of the Department of Otolarynogology at the University of Texas Health Science Center. As a representative of the American Academy of Otolarynogology—Head and Neck Surgery, I greatly appreciate this opportunity to speak on behalf of the NASA Life Sciences budgetary request.

We're a professional group of over 8,000 medical specialists treating disorders of the ears, nose and throat, and related areas. We're the second oldest medical specialty in the United States.

We comprise the largest body of clinicians and scientists dedicated to the study and treatment of disorders of the inner ear and its connections to the brain. It was this interest in the system and other areas that affect the neck and we strongly support the research efforts of NASA's Life Sciences Office.

MOTION SICKNESS

As you undoubtedly know, significant adaptation process occurs in many space travelers. This process, more commonly called motion sickness, deleteriously affected the crew members in the early days of space flight as well as during reentry into the Earth's atmosphere.

An in-depth study of this phenomenon must be made to develop appropriate countermeasures for the astronauts. Such a study would also provide an opportunity to fully understand the complex systems in the inner ear and the brain in more detail than possible before.

The impact of such knowledge could have far-reaching consequences in its application to the common problem of balance disorders on Earth.

It is conservatively estimated that perhaps one-tenth of the U.S. population, roughly 20 million people, have some difficulty with balance, or seek medical care for vertical dizziness at some time.

While time does not permit me to discuss other areas, the additional biomedical problems of bone loss and the effects of radiation on the astronauts in space are also problems we see daily in a clinically different form on Earth.

It is a key desire of our academy to support the opportunity for research in these areas. The knowledge gained from fundamental space biology and space medicine research, as outlined in the NASA Life Sciences proposal, will certainly extend our understanding of the human body in a manner not possible in any other setting.

We can then apply these understandings to improving the health and well-being of the people of America as well as the rest of mankind.

As scientists, researchers, and clinicians, we wholeheartedly endorse the proposed efforts of NASA's Life Science in studying these problems in the unique laboratory of space. It's vitally important to support these research efforts in the long term and continuing basis in order to meet the medical challenges of humans in space.

We thank you and your committee for your support of the NASA budget in the past and still encourage that the highest priority should be given to funding this research, so that, again, we can regain the world's leadership position in biomedical research in Space, and benefit from its applications in human disorders on Earth.

Senator KERREY. Thank you very much.

[The statement follows:]

STATEMENT OF G. RICHARD HOLT, M.D.

Chairwoman Mikulski, members of the Committee, ladies and gentlemen; I am Doctor Richard Holt, Professor and Head of the Department of Otolaryngology at the University of Texas Health Science Center in San Antonio.

As a representative of the American Academy of Otolaryngology—Head and Neck Surgery, I greatly appreciate the opportunity to speak on behalf of the NASA Life Sciences budgetary requests. The Academy of Otolaryngology—Head and Neck Surgery is a professional group of over 8,000 medical and surgical specialists who treat disorders of the ears, nose, throat and related areas. We are the second oldest medical specialty in the United States and comprise the largest body of clinicians and scientists dedicated to the study and treatment of disorders of the inner ear and its connections to the central nervous system. It is this interest in the neurovestibular system and other areas of the head and neck region, which has led us to strongly support the research efforts of NASA's Life Sciences.

As you undoubtedly know, a significant adaptation process occurs in many space travelers upon exposure to microgravity. This process, known commonly as "space motion sickness" can deleteriously affect the performance of a crew member in the early days of space flight as well as during re-entry into the earth's atmosphere. An in-depth study of this phenomenon must be made to develop appropriate countermeasures which can ensure the health of the astronaut. Such a study would also provide the opportunity to explore and understand the complex and unique systems within the inner ear and brain in more detail than ever possible before.

The impact of such knowledge could have far-reaching consequences in its application to the common clinical problem of balance disorders on earth. It is conservatively estimated that perhaps 1/10th of the United States population, or roughly 20 million people, have some difficulty with balance or seek medical care for vertigo or dizziness at some time.

Vertigo or dizziness is a significant health care problem which to date has been difficult to manage because of the limited knowledge of the effect of gravity upon the development and maintenance of our balance mechanisms. For decades, many researchers from the Otolaryngology community, including Dr. Manning Correia and Doctor Makoto Igarashi, have been working with NASA to develop the framework for furthering research into this exciting area of our body's balance control system.

Another area of significant research need for our nation is that of the effect of ionizing radiation upon the body. As specialists who care for patients with skin cancer of the head, face and neck, the most common sites for cancer in the body, we already recognize the effect of this type of radiation on our health and well-being. As head and neck surgeons, we frequently treat malignancies in this area with primary or secondary radiation therapy. However, much is not known about the radiation effects on the body, particularly on a cellular level. As the ozone layer around the earth diminishes, more skin cancers are likely to occur, and we must be prepared with adequate countermeasures—countermeasures that may well develop from research performed by NASA's Life Sciences in Space.

Finally, an additional area of mutual interest with NASA is that of bone resorption or demineralization. The ability to understand what regulates the complex system of bone formation at a cellular level in this unique space environment will, in all likelihood aid our understanding of bone formation in general and can be applied to patients on earth with osteoporosis, poorly healing bone wounds of the head and face as well as other areas of the body, and to the reconstruction of bone in congenital, traumatic or post-cancer removal defects.

It is a keen desire of our Academy to support the opportunity for research in these areas. The knowledge gained from fundamental space biology and space medicine research, as outlined in the NASA Life Sciences proposal and reflected in their budgetary needs, will most certainly expand our understanding of the human body in a manner not possible in any other setting. We can then apply these understandings to improving the health and well-being of the people of America as well as the rest of mankind. As scientists, researchers, and clinicians, we wholeheartedly endorse the proposed efforts of NASA's Life Sciences in studying these problems in the unique laboratory of Space. It is vitally important to support these research efforts on a long-term and continuing basis in order to meet the medical challenges of humans in Space.

Because the Life Sciences budget has sustained decreased funding in the recent past, the highest priority should be given to funding this research so that we again can regain the world's leadership position in biomedical research in Space and benefit from its applications to human disorders on earth.

Although we support the current level of research within NASA's Life Sciences Division, we also realize that there are a wide range of research opportunities within NASA which could be funded beyond their present level.

Thank you very much for the opportunity to present this testimony in support of NASA's Life Science's budget.

STATEMENT OF DR. V. JUNE SCOBEE, CHALLENGER CENTER FOR SPACE SCIENCE

Senator **Kerrey**. Dr. Scobee.

Dr. **Scobee**. Thank you for this opportunity to appear before you today. I also send personal regards from our distinguished board of directors and to Senators Jake Garn and John Glenn.

Today, we have our new president, Doug King, and our new president of the Challenger Center, Dr. Tom Stoffer. Dr. Stoffer is not only a leader in space education, but a personal friend of the family. As you know, the Challenger Center was initiated by the families of the crew that were killed in 1986, one of whom was my husband. Coincidentally, today would have been his 46th birthday.

Challenger Center is worth a place in the program. It's a place. It's a network of learning centers that are unique in both design and location in that they could be as small as a desk in a country school or as complex and futuristic as our Plant Space Life Center to be located here in Washington, DC.

APPRECIATION EXPRESSED FOR FEDERAL SPACE SCIENCE TRUST

We come today to thank the committee for establishing the Federal Space Science Trust. As a result of that trust, we have many exciting developments that have taken place, one of which is that doors have been opened for our first Center in Houston, TX.

As a result, thousands of youngsters and teachers have had an opportunity to take part in a learning experience.

In addition, as many as 65,000 schools have taken part in the use of the curriculum that encourages the youngsters to apply science and math skills in the learning experience; it motivates them to want to know more.

We've also had two television conferences. Teachers have taken a place with their students to help them be more experienced and knowledgeable.

Also, workshops with as many as 4,000 teachers taking part each summer in that training. As we know, the road to the 21st century classroom is the same path in any country. We need the leadership and vision of people in Government and industry and education to take part for that path to open wide its doors of the 21st century classroom.

We commend you for that leadership. As many as 24,000 individuals have also supported us with as much as $250,000, people who range from youngsters who have given their tooth fairy money to grandparents and leaders and CEO's of industry.

We thank you for that leadership and invite you to continue support of the Challenger Center.

Senator KERREY. Thank you.

[The statement follows:]

STATEMENT OF DR. V. JUNE SCOBEE

Madam Chairman and Members of the Subcommittee, thank you for this opportunity to appear before you. I bring you personal regards and appreciation from all seven *Challenger* families, and Challenger Center's distinguished Board of Directors. We are delighted that both Senator Jake Garn and Senator John Glenn are valuable members of that Board, and continue to serve us well. I am joined today by Challenger Center's new President, Doug King, and by our new Chairman, Dr. Tom Stauffer. Tom is President of the University of Houston at Clear Lake, and is not only a respected educator, but a trusted friend of all the *Challenger* families.

First I want to express the appreciation of the Board and the *Challenger* families to this Committee for your support. As you know, the Challenger Center for Space Science Education was formed by the families of the seven *Challenger* astronauts lost on flight 51-L in 1986. Using simulated space travel as a learning tool, we are teaching children the math and science skills necessary to be effective citizens in the high technology environment of the twenty-first century.

Since the creation of the federal space science education trust in last year's appropriations process, many exciting developments have taken place at Challenger Center. They include:

- The opening of our first Mission Site at the Houston Museum of Natural Science; more than 5,000 students have experienced the excitement of learning in our simulator there; an exhaustive evaluation of the program has taught us much as well. The lessons we have learned from the students and teachers in Houston are being applied to make the process even more effective.
- We have received more than 90 indications of interest from other science museums, school districts, and colleges who wish to become Challenger Center mission sites; 13 have been approved, thus far and our second mission site will open at the Howard B. Owens Science Center in Prince Georges County, Maryland, on July 17th; others which are close to announcement include New Orleans, Seattle, Boston, Tampa/St. Petersburg, Denver, and Wheeling, West Virginia.
- More than 24,000 individuals from every state in the nation have contributed to Challenger Center. A total of more than $4 million in private funds has been raised to date.
- Challenger Center curriculum was sent to over 65,000 elementary schools across America so that children could learn from the successful launch of the Discovery mission last fall; 1,500 of those schools then participated in our evaluation of that curriculum.
- We held a national teacher training conference in Houston in cooperation with Johnson Space Center; more than 250 award-winning teachers from almost every state attended; conferences planned for the coming year will involve as many as 4,000 teachers.
- Two national teleconferences introduced thousands of students across the country to the Apollo-Soyuz astronauts and to General Chuck Yeager.

- Here in Washington, we are in negotiation with the District's Redevelopment Land Agency to acquire a full city block in Southeast Washington for our national headquarters and flagship training facility; this site will serve the entire DC School District, as well as students from across the nation. If negotiations remain on schedule, we will break ground late this fall, begin construction next summer, and be fully operational by 1992.

Obviously, it has been a busy and productive year for Challenger Center. But much remains to be done. Our second curriculum scenario, "Return to the Moon," will be used for the first time this July during the 20th anniversary of America's landing on the moon. Michael Collins, part of that original Apollo II crew, will be joined by children in our Maryland Mission Site to recreate that historic occasion. They will be linked by satellite with our Houston Center, where children working with real Mission Controllers from the Apollo era will guide them to a safe landing. We welcome all of you to join us July 17th for this important occasion.

International interest in Challenger Center has been intense, with serious inquiries from nine nations. However, our Board of Directors has chosen to move slowly in expanding overseas, in the belief that we should serve our greatest needs at home before expending efforts abroad.

As we move further into Challenger Center's maturity, we welcome our continuing partnership with Congress. We look forward to serving 100,000 children with our programs in the next year. By 1992, we will touch 5 times that number annually. In so doing, we will keep our pledge to you, to help keep America in the forefront of technology and education.

Once again, on behalf of Challenger Center and the Board of Directors, I want to thank you for your support and for your commitment to the education of America's children, the citizens of the twenty-first century. Although I will soon be married, my husband and I intend to remain actively involved with Challenger Center's progress, and I look forward to working with you in the future.

FEDERAL EMERGENCY MANAGEMENT AGENCY

STATEMENT OF JOSEPH F. MYERS, DIRECTOR, NORTH CAROLINA EMERGENCY MANAGEMENT ASSOCIATION

Senator **KERREY**. Next, we have Joe Myers.

Mr. **MYERS**. Thank you, Mr. Chairman.

I am director of the North Carolina Emergency Management Association and current president of the National Emergency Management Association. This association, NEMA, is made up of directors of State Emergency Management Directors across this country responsible for coordinating, guiding, and supporting State and local emergency management programs that address virtually every type of hazard that our society faces today, both ecological, man-made, and natural disasters.

It's in this context that we place emphasis on developing and maintaining emergency preparedness response programs at the local level.

TIMELY RESPONSE CRITICAL

I think the recent *Valdez* oil spill and the Armenian earthquake reinforced a basic tenet that we have in emergency preparedness today, and that is that the first 24 hours of any disaster are critical.

An effective response and recovery efforts are determined by the level and quality of training for not only the first response but also the knowledge of our elected officials and those that have to make major decisions.

The *Valdez* incident is testimony to what can happen if the preparedness infrastructure is not in place.

We believe that FEMA's defense program is a critical link in the Federal, State, and local partnership efforts to develop a crisis management capability that is based on intergovernmental coordination and cooperation.

In basic terms, the national warning systems, the emergency operations centers, the emergency broadcast systems, and the emergency management personnel that is funded in the civil defense program to enhance our national security are all used on a routine basis in States to support emergency operations and recovery, particularly incidents in hazardous materials and natural disasters.

I know in my State alone last year, we had over 2,400 emergencies. Two-thirds of these were hazardous materials. The bulk of the balance would have been in the natural disaster area.

NEMA strongly supports the increases in FEMA's fiscal year 1990 budget. We respectfully request your consideration for an enhanced funding and emergency assistance dollars restoring student status where first responders can't get trained, administer the earthquake, and other natural disaster programs as we did on a 75 to 25 cost share basis instead of the present 50 to 50, and restore the $5 million that has been authorized under title III to support State and local hazardous material training.

We also would like to see FEMA take the lead role in the hazardous materials activities. NEMA believes these additional dollars will result in measurable improvements.

We don't believe that it should be reprogrammed dollars because budgets are not keeping pace with the current State and local requirements, that are required for us to have a good, viable program within this country.

So the emergency management professionals at the State and local level need your assistance.

Thank you.

Senator KERREY. Thank you.

[The statement follows:]

STATEMENT OF JOSEPH F. MYERS

Madam Chair and Members of the Subcommittee:

On behalf of the National Emergency Management Association (NEMA), I appreciate the opportunity to testify on the fiscal year 1990 Civil Defense budget of the Federal Emergency Management Agency. NEMA's members are the directors of State emergency management agencies, and are responsible for coordinating, guiding and supporting State and local emergency management programs across the nation. These programs address virtually every type of natural, man-made and technological hazard that our society faces. In this context, emphasis is placed on developing and maintaining emergency preparedness programs at the local government level. Recent disasters such as the Valdez oil spill and the Armenia earthquake reinforce a basic tenet of emergency preparedness: the first 24 hours of a disaster are critical; and furthermore, the effectiveness of response and recovery efforts are typically determined (or predetermined) by the level and quality of emergency planning, training, and hazard awareness and education among local officials and the public. The Valdez incident is testimony to what can happen if this planning and training infrastructure is not in place.

FEMA's Civil Defense program is a critical link in the Federal-State-Local partnership effort to develop a crisis management capability that is based on intergovernmental coordination and cooperation. In basic terms, the national warning and communications systems, emergency operations centers and emergency management personnel that are funded through the Civil Defense program to enhance national security are all used on a routine basis in our states to support emergency operations, particularly incidents involving hazardous materials.

The National Emergency Management Association wishes to express its appreciation to this committee for its support of the Civil Defense program, and specifically for the increase in the fiscal year 1989 Civil Defense budget. Approximately three fourths of all Civil Defense funding is passed through to State and local government emergency management programs, and again this funding is critical to the development of a State and local emergency preparedness, response and recovery capability for all types of hazards.

NEMA strongly supports the four percent increase that is proposed for FEMA's fiscal year 1990 Civil Defense budget. However, there is evidence that recent increases in the Civil Defense budget are not keeping pace with State and local requirements for federal funds to support our nation's emergency management programs. A 1988 survey conducted by NEMA revealed a shortfall of over $20 million in Emergency Management Assistance (EMA) funds when compared with the actual need at the State and local levels.

NEMA urges this committee to consider a ten percent annual increase in Civil Defense funding over the next five years to address the actual and projected shortfall in EMA funds. Furthermore, it is recommended that such increases not be made with re-programmed dollars.

The balance of my testimony will focus on proposed budget cuts in three programs—emergency management training, earthquake and hurricane preparedness, and Title III of SARA—with emphasis on the implications of the proposed cuts for emergency preparedness efforts in communities across the nation.

EMERGENCY MANAGEMENT TRAINING

FEMA's proposed budget for fiscal year 1990 calls for a reduction in training stipends for State and local officials, and first responders attending the Emergency Management Institute and the National Fire Academy resident programs. The proposal to require students to pay a portion of the travel costs to attend training in Emmitsburg, Maryland will have the greatest impact on the volunteer fire and emergency services organizations, particularly those in the western part of the country. In most states, volunteers comprise approximately 75 percent of the professional work force in the fire and emergency services field. The reduction in the student stipend would effectively preclude their attendance and participation in training sessions at these two national institutions. NEMA recommends that funding for student stipends be restored to the fiscal year 1989 level.

EARTHQUAKE AND HURRICANE PREPAREDNESS

The Administration's request for fiscal year 1990 includes a decrease of $504,000 from the 1989 level in the category of "Earthquake and Other Hazards". The proposal also features a 50 percent Federal/50 percent State cost share of financial assistance in the Earthquake and Hurricane Preparedness programs, which are currently administered on a 75/25 matching basis.

NEMA urges that the current (fiscal year 1989) Federal-State cost sharing basis for earthquake and hurricane preparedness be maintained at the 75/25 ratio. In fact, the Expert Review Committee, appointed by FEMA to review the National Earthquake Hazards Reduction Program (NEHRP), recommended a five fold increase in funding. The Armenia earthquake, in particular, has focused national attention on the need to accelerate State and local earthquake preparedness efforts in our country, particularly in the Eastern U.S. There has been a substantial amount of earthquake research conducted during the past decade under the NEHRP, and important "lessons learned" have emerged from the Armenia and Mexico City earthquakes. Emphasis needs to shift towards the application of this research at the regional, state and local level. In essence, it is important that, at a minimum, federal funding support and technical assistance be maintained at current levels. A decrease would undermine current initiatives by states to develop and implement earthquake preparedness programs that will minimize casualties and damages from the next earthquake. Finally, I would like to state NEMA's continued support for FEMA as the lead federal agency in the NEHRP.

TITLE III OF SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986

I must express NEMA's concerns over FEMA's role in implementing Title III of SARA and specifically the importance of restoring the $5 million that was authorized under the Act for training.

Title III has resulted in unprecedented State and local efforts to prepare for hazardous material accidents and to inform the public of the presence of hazardous chemicals in their communities. Congress, however, has failed to capitalize on the progress and momentum generated by Title III. Specifically, the lack of federal funding for these efforts, coupled with fragmentation at the federal level with respect to program guidance and leadership, has served as an impediment to effective implementation of Title III at the State and local level.

Simply put, FEMA needs to assume a more aggressive role in a national program for hazardous materials preparedness and response. Hazardous materials accidents are clearly the most common type of hazard that we face in our communities. On a given day, a State emergency management office will receive from three to five requests to assist in a hazardous materials accident. The significance of Title III of SARA is that it provides for the establishment of thousands of local committees, comprised of public and private sector officials, dedicated to community awareness and preparedness as relates to hazardous materials. Moreover, the federal funds that were appropriated through Title III for training and organizational development were more than matched by State and local funds.

NEMA strongly encourages the restoration of the $5 million that is authorized under Section 305 of Title III to support State and local training; and furthermore, that FEMA be provided with adequate budgetary support to effectively assume a more active role in all aspects of hazardous materials preparedness, response, and recovery (clean-up).

In summary, NEMA supports the proposed increases in the Civil Defense budget of the Federal Emergency Management Agency for fiscal year 1990, and respectfully requests your consideration of enhanced funding in the areas I have just discussed. I can say, unequivocably, that the additional funding will result in a measurable improvement in the preparedness of State and local officials for any type of disaster. The emergency management professionals at the State and local level need your assistance and welcome your support. Thank you.

Consumer Product Safety Commission

STATEMENT OF MARY ELLEN R. RISE, CONSUMER FEDERATION OF AMERICA

Senator **Kerrey**. Next, we have Mary Ellen Fise.

Ms. **Fise**. Thank you, Mr. Chairman. I would like to note that my testimony today is not only on behalf of the Consumer Federation of America, but also on behalf of the United States Public Interest Research Group and the Consumers Union.

I don't know whether to give you my congratulations or sympathy in reaching the end of the witnesses. It's not ironic that as the only witness to testify on the Consumer Product Safety Commission's budget, that I'm the last in line, your 78th witness.

CPSC is often overlooked, underestimated and underfunded. The fiscal year 1990 budget is no exception. My message today is simple and, compared to other budget requests, inexpensive.

CFA, USPIR, and CU request that we increase the CPSC budgets $5 million over the administration request of $33.4 million.

We believe that the $33.4 million request is woefully inadequate. It is a mockery of consumer safety protection. It is an amount less than the Agency's budget in 1974, its very first year of operation.

Unlike other Federal agencies, CPSC has already severely tightened its belt, unfortunately, almost to the point of strangulation. We'd call your attention to the fact that in the OMB budget request for CPSC, there is no money for hazard contracts that enabled the agency to obtain information needed to support CPSC action. There is no money for equipment. Not just a small amount—no money at all.

CHILD-RESISTANT CIGARETTE LIGHTERS

To take just one example of how such a low budget affects the agency's operation, the CPSC rulemaking on the child-resistant cigarette lighters will be stalled for 1 full year because needed studies can't be performed.

This means 1 more year where 170 persons die as a result of fires started by children playing with cigarette lighters and $375 million in property damage.

The Agency's tight funds will also restrict their ability to investigate product-related accidents, hampering their ability to force recalls, to get unsafe products off the store shelves.

Monitoring the altering of the legal consent decree will also be curtailed. If another ATV-like hazard was to come along or some unanticipated event, the CPSC simply will not be able to deal with it.

We believe the message being sent to industries regulated by CPSC is: Take a gamble on the Government.

Where the budget is as tight as CPSC's, business groups understand that it will take years before the Agency can address any new issues.

There is no carrot to entice and, clearly, no stick to threaten behavior on the part of industry. Now, $5 million would enable the agency to conduct hazardous substance reduction studies, would permit more resources for investigation actions, and would enable the Commission to have the resources and equipment it needs to do the job.

The money would be well-spent in terms of Government agencies. CPSC is the taxpayers biggest friend; preventing deaths and injuries means saving not only money and property, but preventing needless pain, suffering, and anguish on the part of our citizens.

We urgently request you to increase the CPSC budget by $5 million.

Thank you.

Senator **Kerrey**. Thank's to all of you.

[The statement follows:]

STATEMENT OF MARY ELLEN R. FISE

Madam Chair, I am Mary Ellen Fise, Product Safety Director of Consumer Federation of America. I am pleased to testify today on the Fiscal Year (FY) 1990 Appropriation for the U.S. Consumer Product Safety Commission (CPSC). CFA is a non-profit consumer advocacy organization representing more than 240 local, state and national consumer groups with a combined membership of more than 50 million Americans.

It would be an understatement to simply say that CPSC needs more money. CFA believes that Congress must unlock the fiscal handcuffs that have been placed on this agency and begin to restore resources to the Commission so that it can adequately perform its statutory responsibility. We request that this Subcommittee appropriate an additional $5 million to that requested by the agency and OMB for Fiscal Year (FY) 1990 and consider subsequent increases of $5 million for years thereafter.

CFA's support for an increased CPSC budget is not a parochial consumer concern. Business also recognizes that preventing injuries makes sense financially. I am pleased to submit for the record a recently released Consumer Health and Safety Agenda prepared by The Coalition for Consumer Health and Safety. Members of this coalition include 13 consumer and health groups and 13 insurance companies and associations. Of particular interest to this Subcommittee is the Coalition's support for increased funding for CPSC:

> "At a minimum, an annual budget of $50 million is needed to get the agency back on track and enable it to address the hazards that have been ignored for lack of resources. Congress and the Administration must ensure that the agency maintain an adequate budget and staff levels in order to perform effectively. In particular, efforts should be made to see that adequate resources are available for hazards that are the subject of rulemaking or court orders, in order to shorten the four year or more time period for completion of Commission rulemaking proceedings." (p. 16)

CPSC's Financial Nightmare

Imagine being offered what sounds like a great job at a safety agency that has the potential to saves lives and substantially benefit consumers' daily life. But then you learn there will be absolutely no training for the job. You will be working in an asbestos-ridden building. You may have to purchase your own office supplies. You will have to fight vigorously for funds for your projects since the agency's budget is now less than it was when it was founded 15 years ago. If you want to prepare an educational video to alert the public about a hazard, you'll have to first find a co-worker that will loan you his video camera and house (hopefully at a time when his young children are not around making noise). If you identify a new hazard it may be years until you can analyze the data and remedies to address it. If you want to examine a product that caused a consumer injury or death, you may have to wait months until other accidents happen in that town so that a travel trip to collect evidence is justified. If you get involved in a rulemaking project it will more likely be four years or more until a final rule is issued.....

No, this is not a bad dream! It is not an exaggeration. It is reality for the current 519 employees of the Consumer Product Safety Commission.

CFA understands that this Subcommittee will be hearing from many interested parties seeking money for the myriad of agencies under the Subcommittee's appropriating authority. We understand that money is tight and there is a deficit to be addressed. However, never before has this agency, or one like it, been faced with such an impossible task---stretching too few dollars over such a great number of critical tasks and responsibilities. Unlike other federal agencies, CPSC, with the help of the Reagan and now Bush Administration, has already severely tightened its belt; unfortunately almost to the point of strangulation.

Despite this current dismal situation, we believe that this agency can be turned around and can function positively on behalf of consumers. With passage of CPSC Reauthorization legislation in the House and Senate, appointment of a Chairman committed to the mandate of the agency, and a budget freed of the hacksaws of OMB, CPSC can have a new lease on life.

Inadequacy of the OMB Budget Mark for CPSC

CPA believes that the OMB budget mark for CPSC of $33,479,000 and 519 FTEs is woefully inadequate and that consumers will suffer as a result. An appropriation of this amount will affect the agency in two major ways: the number of safety issues and the speed and thoroughness with which they are addressed will be severely compromised; and the ability of the agency to function on a day-to-day basis will be unduly jeopardized.

Without an adequate budget and staff, the number of safety issues addressed by the agency will obviously decline. Priority projects selected by the Commission have traditionally been those that are fully funded. However, because of the limits of the FY'90 budget, priority projects will also suffer. For example, because there are insufficient funds to conduct a needed exposure survey, the cigarette lighter project, an issue which is the subject of agency rulemaking, will be delayed at least one year.1/ This delay is on top of an already protracted rulemaking process.

Another rulemaking effort, amendment of the existing small parts test for children's toys, will also take four years or longer to complete, in large measure due to limited funds. Both the small parts and cigarette lighter rulemakings resulted from petitions filed with CPSC. Other petitions, for hazards from products such as crib toys, hair dryers and the chemical acetonitrile, await Commission action. Little or nothing will be done on these issues in FY 1990---again, because of budget restraints. Perhaps an issue of greatest concern is the CPSC budget's lack of contract funds to support hazard identification and analysis. Without the ability to obtain information, the agency is being asked to perform an impossible task and the quality of its hazard assessments will diminish while the time needed to complete projects is sure to increase.

CPA is also extremely concerned about the agency's ability to respond to an unplanned hazard or event. I recently asked several agency employees what would happen if the Commission were faced with another all terrain vehicle (ATV)-like hazard.2/ The answers included: "it would be devastating"; "we barely have any discretionary money--we would probably have to reduce employees in order to have funds to study the new problem"; "we would have to kill other projects"; "we wouldn't be able to adequately address the problem." Although not mentioned specifically, each employee implied that keeping their fingers crossed (in hopes that such a hazard does not come about) was the best they could do right now in anticipation of such an event -- a notion that does not exactly inspire confidence in our government.

CPA is also concerned that the FY'90 budget contains a two-thirds

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1 This rulemaking effort addresses child resistance of cigarette lighters. Each year 170 deaths are attributed to children playing with cigarette lighters. A one year delay in this project will not only mean the loss of these lives but will also cost our nation $300-375 million in property damage.

2 From 1985 through FY 1990 the ATV project has and will consume $8.1 million of the agency's resources.

reduction in the allocation of funds for monitoring of the ATV consent decree (from $166,000 in FY'89 down to $50,000 in FY'90). As a result of this decrease, surveillance will occur only on the most critical requirements of the decree. The Commission will not have the funds to address any unforseen circumstance, such as the widespread willingness to sell ATVs to young children identified last year in Virginia.

In addition to the number and degree with which safety hazards are addressed, an inadequate CPSC budget will also affect the day-to-day operations of the agency. Expansion of the National Electronic Injury Surveillance System, which collects vital safety information from hospital emergency rooms, will be delayed. This expansion is really an attempt to restore data collection to pre-1981 levels; since 1981 the number of hospitals participating has been cut in half, severely reducing the information available to predict hazard trends.

The ability of agency to get information out to the public is yet another function that will suffer in FY'90. State and local information projects will be decreased as will distribution of the agency's information materials. While our organization is much more concerned about the agency's ability to conduct rulemakings and hazard analysis, we believe that there must be some consumer information activities performed by CPSC.

Equipment, travel, and training are three additional areas that require resources above the FY'90 budget levels. There is no money at all allocated for equipment; hence, repair and replacement of laboratory equipment, progress in completing the computerization of the agency (many offices are in need of computers), and purchase of xerox machines, printers (and their maintenance contracts) will be impossible. Resources for training and travel have also been severely reduced from previous years. Reductions in training affect employees' ability to perform their jobs (whether it be to learn computer skills or for a new field investigator to learn how to collect evidence for a case the agency is considering bringing). Travel reductions affect hazard reduction efforts through attendance at voluntary standards meetings and compliance efforts to investigate potential recall cases.

Given these severe limitations on the agency, CFA believes that the message being sent to industries regulated by CPSC is "take a gamble on the government." With a budget as tight as CPSC's, business groups understand that it will take years before the agency can address any new issues. There is no "carrot" to entice and clearly no "stick" to threaten compliant behavior on the part of industry. In CFA's estimation, a safety agency that is not taken seriously is both ripoff of taxpayers and a deception to unwitting consumers who believe they are being protected. We believe that Congress can help remedy this situation through an appropriation that will provide the agency the resources to take action when warranted.

Steady Increases in CPSC Budget Needed

CFA requests that this Subcommittee increase the CPSC's appropriation for FY 1990 by $5 million from the OMB mark of $33,479,000 to $38,479,000. We believe that in future years additional $5 million increases are needed until the agency's budget has at least reached $50 million. At this amount CPSC will be at the level it should have been in 1983 had the agency's budget merely kept pace with inflation.3/

These relatively small increments are a worthy investment in our country's health and safety. Because of the extremely high costs associated with consumer deaths and injury, the return on the

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3 If the CPSC's actual 1974 appropriation of $34,776,000 had been adjusted each year with a modest inflation factor of 4%, the agency's budget in 1983 would have been $49,497,000; in 1984 it would have been $51,476,000; and in 1989 it would have been $62,630,000---substantially more than the $50 million sought by CFA.

government's dollar will be substantial.[4] Consumers deserve a safety agency they can rely on and not one which because of budget limitations exists in name only. CFA strongly urges this Subcommittee's renewed commitment to the Consumer Product Safety Commission by increasing the agency's FY 1990 budget by $5 million.

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[4] For example, the prevention of just one serious head injury is nearly the equivalent of the $5 million increase in CPSC's budget we are advocating. The National Head Injury Foundation estimates that the costs associated with a severe brain injury to one victim, including rehabilitation, is approximately $4.5 million. Severe head injuries are associated with bicycling, diving and other consumer product-related activities. In California alone, debilitating injuries resulting from child drownings cost over $15 million per year for the 77 children currently living in state hospitals.

SUBCOMMITTEE RECESS

Senator **Kerrey**. This will conclude the hearings on the budget requests for the departments and agencies of the VA, HUD, and Independent Agencies Subcommittee.

The Subcommittee will now stand in recess until the call of the Chair.

[Whereupon, at 12:15 p.m., Friday, May 19, the hearings were concluded, and the subcommittee was recessed, to reconvene at the call of the Chair.]

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